

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

HEAVY DUTY LIGHTING, LLC,)
Plaintiff,) Civil Action No. 6:21-cv-1259
v.) **JURY TRIAL DEMANDED**
XICATO, INC., AND DESIGN BUILD)
LIGHTING INC.,)
Defendants.)

COMPLAINT

Plaintiff Heavy Duty Lighting, LLC (“Plaintiff”) hereby brings this Complaint against Defendants Xicato, Inc. (“Xicato”) and Design Build Lighting, Inc. (“DBL”) (Xicato and DBL are collectively referred to as “Defendants”) seeking damages and other relief for patent infringement, and, demanding trial by jury, and alleges as follows:

PARTIES

1. Plaintiff Heavy Duty Lighting, LLC is a limited liability company organized under the laws of Texas. Plaintiff is the owner of the entire right, title, and interest of a portfolio of patents covering technologies related to new and improved systems and methods for Light-emitting devices.

2. Upon information and belief, Defendant Xicato, Inc. is a California company with its principal place of business at 101 Daggett Drive, San Jose, California, 95134.

3. Upon information and belief, Defendant Design Build Lighting is a Texas company with its principal place of business at 333 FM 2325, Wimberley, Texas, 78676-5011.

4. Defendant Xicato is a developer of decorative residential and commercial lighting products. Defendant Design Build Lighting is identified and designated by Xicato on the “Contact” page of Xicato’s website as Xicato’s sole Sales Representative in the San Antonio and Austin Regions. *See* [Contact - Xicato](#) (last accessed Dec. 2, 2021).

5. Upon information and belief, in its role as Xicato’s sole Sales Representative in this District, Defendant Design Build Lighting designs, supervises and manages installation of lighting projects in this District, including visits to installation sites, using the Xicato products that are the subject of this complaint.

JURISDICTION AND VENUE

6. This action arises under the patent laws of the United States, Title 35 of the United States Code, 35 U.S.C. § 271 et seq. The Court has subject matter jurisdiction over this action pursuant to 28 U.S.C. § 1331 and 1338(a).

7. The Court has general and specific personal jurisdiction over Defendant Xicato because it conducts substantial business in this forum, directly and/or through agents and intermediaries, including: (i) at least a portion of the infringing activity alleged herein; and (ii) and regularly doing or soliciting business, engaging in other persistent courses of conduct and/or deriving substantial revenue from goods and services provided to Texas residents in this District.

8. The Court has general and specific personal jurisdiction over Defendant DBL because it is a citizen of Texas residing in this District, has a regular and established place of

business in this District, and conducts substantial business in this District, including acting as the sole Sales Representative and agent for Defendant Xicato.

9. Plaintiff's cause of action arises, at least in part, from Defendants' presence in, and contacts with and activities in this District and the State of Texas.

10. Upon information and belief, Defendants, directly and/or through agents and intermediaries, import, make, use, sell, offer for sale, ship, distribute, advertise, promote, and/or otherwise commercialize infringing products in this District and the State of Texas. Upon information and belief, Defendants regularly conduct and solicit business in, engage in other persistent courses of conduct in, and/or derive substantial revenue from goods and services provided to residents of this District and the State of Texas.

11. Venue is proper in this District pursuant to 28 U.S.C. §§ 1391(b), (c), (d) and 1400(b). Upon information and belief, Defendant DBL has a regular and established place of business located at 333 FM 2325, Wimberley, Texas, 78676-5011. Sales and installation of Defendant Xicato's products, including the products that are subject of this complaint, are conducted from and through DBL's principal place of business.

12. Upon information and belief, Defendants have committed substantial acts of infringement in this District and, as set forth above, have regular and established places of business in this District as described above.

COUNT I – INFRINGEMENT OF THE '195 PATENT

13. Plaintiff incorporates by reference the allegations in all preceding paragraphs as if fully set forth herein.

14. U.S. Patent No. 8,723,195 (“the ’195 Patent”) is entitled “LIGHT EMITTING DEVICE” and was issued on May 13, 2014. A true and correct copy of the ’195 Patent is attached as **Exhibit A**.

15. The ’195 Patent was filed on Mar. 13, 2013 as U.S. Patent Application No. 13/799,373.

16. Plaintiff is the owner of all rights, title, and interest in and to the ’195 Patent, with the full and exclusive right to bring suit to enforce the ’195 Patent, including the right to recover for past infringement.

17. The ’195 Patent is valid and enforceable under United States Patent Laws.

Technical Description

18. The ’195 Patent is a continuation of the application No. 13/011,124, filed on Jan. 21, 2011, now Pat. No. 8,421,094, and relates to the same area of technology.

19. The technology of the ’195 Patent relates to “a substrate having a rectangular outer shape in a top view, a plurality of LED chips, a resin frame formed on the primary surface of the substrate and provided annularly so as to surround a mounting area in which the LED chips are provided, an anode-side electrode land and a cathode-side electrode land which are electrodes to be connected to an external voltage supply of said light emitting device. An electrode wiring pattern may be formed on the primary surface of the substrate including (i) an anode line extending from the anode-side electrode land to a portion under the resin frame and (ii) a cathode line extending from the cathode-side electrode land to the other portion under the resin frame.” **Exhibit A** at abstract.

20. The '195 Patent describes the technical problems facing the prior art in detail. *Id.* at 2:35-3:21 (incorporated here by reference). The prior art problems include “that luminance becomes uneven and that luminous efficiency is decreased due to absorption of light by the electrode wiring patterns.” *Id.* at 2:41-43. Other problems include large package size, complicated manufacturing process, decreased luminance due to light absorption, difficulty to provide LEDs in the package center. *Id.* at 2:35-3:22

21. The '195 Patent teaches a technical solution for the prior art problems in detail. *Id.* at 3:25-4:22 (incorporated here by reference).

22. The '195 Patent further details the advantages of its invention. *Id.* at 4:26-5:22 (incorporated here by reference). The configuration taught by the '195 Patent “reduces distances between the light emitting elements, thereby increasing a packaging density of the light emitting elements. Consequently, it is advantageously possible to restrain that light emitted from the light emitting elements appears bright dots and to restrain in-plane luminance unevenness of the light emitting device. Furthermore, it is also advantageously possible to downsize the light emitting device.” *Id.* at 4:1-9. Undesired light absorption is reduced. *Id.* at 4:10-22.

23. The novel technical solutions taught by the '195 Patent were not well-understood, routine, or conventional at the time of the inventions of the '195 Patent.

Direct Infringement

24. On information and belief, Defendants, without authorization or license from Plaintiff, have been and are presently directly infringing the '195 Patent, either literally or equivalently, as infringement is defined by 35 U.S.C. § 271(a), including through making, using, (including for testing purposes), selling and offering for sale methods and systems infringing one

or more claims of the '195 Patent. Defendants are thus liable for direct infringement pursuant to 35 U.S.C. § 271(a). Exemplary infringing instrumentalities include the Xicato XOB09952715X3621, the Xicato XOB09954015X3621, the Xicato XOB14904050X3621, and all other substantially similar products.

25. Claim 1 of the '195 Patent recites:

1. A light emitting device comprising:
 - (a) a substrate having a rectangular outer shape in a top view;
 - (b) a plurality of LED chips positioned around a center of a primary surface of the substrate;
 - (c) a resin frame formed on the primary surface of said substrate and provided annularly so as to surround a mounting area in which said plurality of LED chips are provided;
 - (d) an anode-side electrode land and a cathode-side electrode land which are electrodes to be connected to an external voltage supply of said light emitting device, the anode-side electrode land and the cathode-side electrode land being provided outside said resin frame and near corners of the primary surface of the substrate,
 - (e) an electrode wiring pattern formed on the primary surface of said substrate including (i) an anode line extending from said anode-side electrode land to a portion under said resin frame and (ii) a cathode line extending from said cathode-side electrode land to the other portion under said resin frame, so as to

electrically connect the plurality of LED chips to the anode-side electrode land and the cathode-side electrode land; and

(f) wherein the resin frame is made of resin that has light reflectivity.

26. Defendants infringe exemplary claim 1, as a non-limiting example only, by the Xicato XOB09952715X3621:

1. The Xicato XOB09952715X3621 is a light emitting device.

XOB09952715X3621
XOB from Xicato, Inc.
LED COB, XOB, LES 9.8, 95 CRI, 2700K CCT, 1275LM
Status: Standard | Data Sheet: [PDF](#) | RoHS Compliance:

Description
XOB delivers Xicato's award-winning color points, unmatched color rendering, and great performance in an industry standard form factor that allows for rapid fixture design resulting in accelerated time to revenue.

The XOB specifications are within the following:

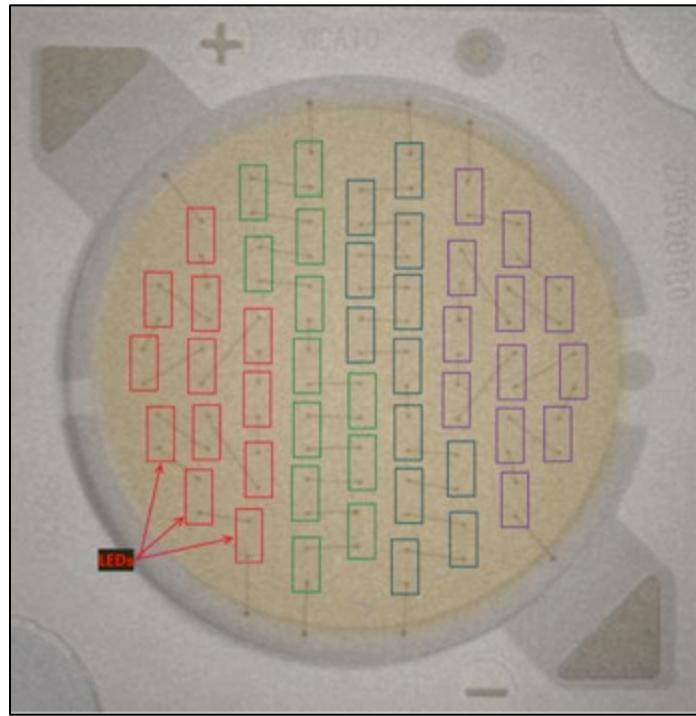
- CCT range: Xicato 2700 – 4000k color points
- Color matching: Xicato 1x2 SDCM
- Lumen output (6mm & 9.8mm): 750 – 1,600
- CRI: 80, 90, 95, Vibrant95

(<https://store.xicato.com/products/detail/xob09952715x3621-xicato-inc/646887/>).

(a) The Xicato XOB09952715X3621 comprises a substrate having a rectangular outer shape in a top view.



(b) The Xicato XOB09952715X3621 comprises a plurality of LED chips positioned around a center of a primary surface of the substrate.



(c) The Xicato XOB09952715X3621 comprises a resin frame formed on the primary surface of the substrate which is provided annularly so as to surround a mounting area in which the plurality of LED chips are provided.

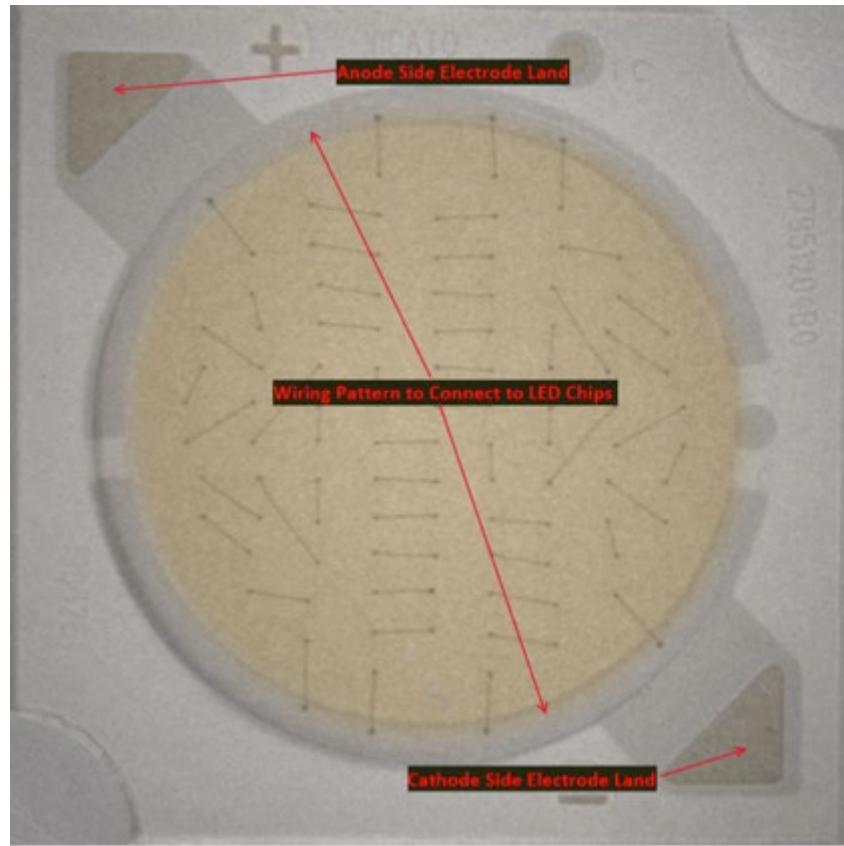


(d) The Xicato XOB09952715X3621 comprises anode and cathode side electrode lands which are to be connected to an external voltage supply. The electrode

lands are provided outside the resin frame and near corners of the primary surface of the substrate.



(e) The Xicato XOB09952715X3621 comprises a wiring pattern formed on the primary surface of the substrate including anode and cathode lines extending from their respective lands to a portion under the resin frame so as to connect to the plurality of LED chips.



(f) The resin frame of the Xicato XOB09952715X3621 is made of resin that has high light reflectivity (e.g. opaque).



27. The foregoing structure, function, and operation of the exemplary Accused Instrumentality meets all limitations of at least exemplary claim 1 of the '195 Patent.

28. Defendants' acts of making, using, selling, offering for sale and/or importing the Accused Instrumentalities are without Plaintiff's license or authorization.

29. Defendants' unauthorized actions therefore constitute direct infringement of Plaintiff's exclusive rights pursuant to 35 U.S.C. § 271(a), either literally or under the doctrine of equivalents, and Plaintiff is entitled to recover from Defendants the damages sustained as a result of Defendants' infringement of the '195 Patent in an amount to be determined at trial, which amount shall be no less than a reasonable royalty, together with interest and costs as fixed by this Court pursuant to 35 U.S.C. § 284.

30. Defendants' infringement of the '195 Patent has injured Plaintiff and Plaintiff is entitled to recover damages from Defendants.

Willful Infringement

31. Defendants had actual knowledge of the '195 Patent at least as of service of this Complaint.

32. Notwithstanding this knowledge, Defendants have knowingly or with reckless disregard willfully infringed the '195 Patent. Defendants have thus had actual notice of infringement of the '195 Patent and acted despite an objectively high likelihood that their actions constituted infringement of Plaintiff's valid patent rights, either literally or equivalently.

33. This objective risk was either known or so obvious that it should have been known to Defendants. Accordingly, Plaintiff seeks enhanced damages pursuant to 35 U.S.C. §§ 284 and 285.

Indirect Infringement

34. At least as early as the service of this Complaint, Defendants indirectly infringe the '195 Patent within the United States by inducement under 35 U.S.C. §271(b). By failing to cease making, using, selling, importing, or offering for sale the Accused Instrumentalities at least as of the service of this Complaint, Defendants have knowingly and intentionally induced users of the Accused Instrumentalities to directly infringe one or more claims of the '195 Patent, including, by: (1) providing instructions or information, for example on publicly accessible websites, to explain how to use the Accused Instrumentalities, including the use of the Accused Instrumentalities in manners described above, which are expressly incorporated herein; and (2) touting these uses of the Accused Instrumentalities in advertisements, including but not limited to,

those on websites. Use of the Accused Instrumentalities in the manner intended and/or instructed by Defendants necessarily infringes the '195 Patent.

35. At least as of the service of this Complaint, Defendants also indirectly infringe the '195 Patent within the United States by contributory infringement under 35 U.S.C. §271(c). Defendants are aware, at least as of the service of this Complaint, that components of the Accused Instrumentalities are a material and substantial part of the inventions claimed by the '195 Patent, and are designed for a use that is both patented and infringing, and have no substantial non-infringing uses. By failing to cease making, using, selling, importing, or offering for sale the Accused Instrumentalities (and components thereof) at least as of the service of this Complaint, Defendants have knowingly and intentionally contributed to direct infringement by their customers of one or more claims of the '195 Patent, including, by: (1) providing instructions or information, for example on its publicly accessible websites, to explain how to use the Accused Instrumentalities, including the use of the Accused Instrumentalities in manners described above, which are expressly incorporated herein; and (2) touting these uses of the Accused Instrumentalities in advertisements, including but not limited to, those on websites. Use of the Accused Instrumentalities in the manner intended by Defendants necessarily infringes the '195 Patent.

36. As a result of Defendants' infringement, Plaintiff has suffered monetary damages, and is entitled to an award of damages adequate to compensate it for such infringement which, by law, can be no less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

COUNT II – INFRINGEMENT OF THE '357 PATENT

37. Plaintiff incorporates by reference the allegations in all preceding paragraphs as if fully set forth herein.

38. U.S. Patent No. 9,093,357 (“the ’357 Patent”) is entitled “LIGHT EMITTING DEVICE” and was issued on July 28, 2015. A true and correct copy of the ’357 Patent is attached as **Exhibit B**.

39. The ’357 Patent was filed on Mar. 18, 2014 as U.S. Patent Application No. 14/217,701.

40. Plaintiff is the owner of all rights, title, and interest in and to the ’357 Patent, with the full and exclusive right to bring suit to enforce the ’357 Patent, including the right to recover for past infringement.

41. The ’357 Patent is valid and enforceable under United States Patent Laws.

Technical Description

42. The ’357 Patent is a division of application No. 13/799,373, filed on Mar. 13, 2013, now Pat. No. 8,723,195, which is a continuation of application No. 13/011,124, filed on Jan. 21, 2011, now Pat. No. 8,421,094, and relates to the same area of technology.

43. The technology of the ’357 Patent relates to “a ceramic substrate; a plurality of LED chips; a printed resistor(s) connected in parallel with the plurality of LED chips; a dam resin made of a resin having a low optical transmittance; a fluorescent-material containing resin layer; and an anode-side electrode and a cathode-side electrode, (a) which are provided on a primary surface of the ceramic substrate so as to face each other along a first direction on the primary surface and (b) which are disposed below at least one of the dam resin and the fluorescent-material-containing resin layer. With the configuration in which a plurality of LEDs, which are connected in a series-

parallel connection, are provided on a substrate, it is possible to provide a light emitting device which can achieve restraining of luminance unevenness and an improvement in luminous efficiency.” **Exhibit B** at abstract.

44. The ’357 Patent describes the technical problems facing the prior art in detail. *Id.* at 2:41-3:28 (incorporated here by reference). The prior art problems include “that luminance becomes uneven and that luminous efficiency is decreased due to absorption of light by the electrode wiring patterns.” *Id.* at 2:47-49. Other problems include large package size, complicated manufacturing process, decreased luminance due to light absorption, difficulty to provide LEDs in the package center. *Id.* at 2:41-3:27.

45. The ’357 Patent teaches a technical solution for the prior art problems in detail. *Id.* at 3:25-4:22 (incorporated here by reference).

46. The ’357 Patent further details the advantages of its invention. *Id.* at 4:26-5:22 (incorporated here by reference). The configuration taught by the ’357 Patent “reduces distances between the light emitting elements, thereby increasing a packaging density of the light emitting elements. Consequently, it is advantageously possible to restrain that light emitted from the light emitting elements appears bright dots and to restrain in-plane luminance unevenness of the light emitting device. Furthermore, it is also advantageously possible to downsize the light emitting device.” *Id.* at 4:7-17. Undesired light absorption is reduced. *Id.* at 4:16-27.

47. The novel technical solutions taught by the ’357 Patent were not well-understood, routine, or conventional at the time of the inventions of the ’357 Patent.

Direct Infringement

48. On information and belief, Defendants, without authorization or license from Plaintiff, have been and are presently directly infringing the '357 Patent, either literally or equivalently, as infringement is defined by 35 U.S.C. § 271(a), including through making, using, (including for testing purposes), selling and offering for sale methods and systems infringing one or more claims of the '357 Patent. Defendants are thus liable for direct infringement pursuant to 35 U.S.C. § 271(a). Exemplary infringing instrumentalities include the Xicato XOB09952715X3621, Xicato XOB09954015X3621, Xicato XOB14904050X3621, and all other substantially similar products.

49. Claim 1 of the '357 Patent recites:

1. A light emitting device comprising:
 - (a) a substrate;
 - (b) a plurality of LED chips positioned around a center of a primary surface of the substrate;
 - (c) a resin frame made of resin that has light reflectivity, formed on the primary surface of said substrate and provided annularly so as to surround a mounting area in which said plurality of LED chips are provided;
 - (d) an anode-side electrode land and a cathode-side electrode land which are electrodes to be connected to an external voltage supply of said light emitting device, the anode-side electrode land and the cathode-side electrode land being provided outside said resin frame and near peripheral end of the primary surface of the substrate;

(e) an electrode wiring pattern formed on the primary surface of said substrate including (i) an anode pattern extending from said anode-side electrode land to a portion under said resin frame and (ii) a cathode pattern extending from said cathode-side electrode land to the other portion under said resin frame, so as to electrically connect the plurality of LED chips to the anode-side electrode land and the cathode-side electrode land; and

(f) a plurality of first wires for connecting the LED chips among said plurality of LED chips to the electrode wiring pattern, a portion of each of the plurality of first wires that is contacted with the electrode wiring pattern being covered by said resin frame.

50. Defendants infringe exemplary claim 1, as a non-limiting example only, by the Xicato XOB09952715X3621:

1. The Xicato XOB09952715X3621 is a light emitting device.

XOB09952715X3621
Xicato, Inc.
LED COB, XOB, LES 9.8, 95 CRI, 2700K CCT, 1275LM
Status: Standard | Data Sheet: [Data Sheet](#) | RoHS Compliance:

Description
XOB delivers Xicato's award-winning color points, unmatched color rendering, and great performance in an industry standard form factor that allows for rapid fixture design resulting in accelerated time to revenue.

The XOB specifications are within the following:

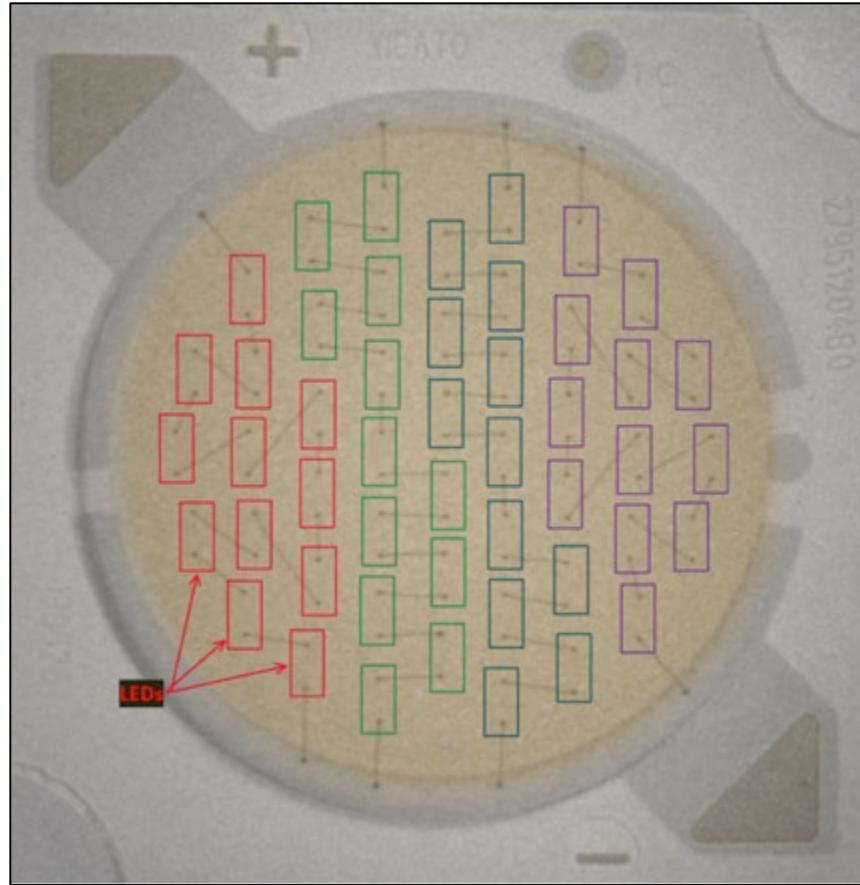
- CCT range: Xicato 2700 – 4000k color points
- Color matching: Xicato 1x2 SDCM
- Lumen output (6mm & 9.8mm): 750 – 1,600
- CRI: 80, 90, 95, Vibrant95

(<https://store.xicato.com/products/detail/xob09952715x3621-xicato-inc/646887/>).

(a) The Xicato XOB09952715X3621 comprises a substrate.



(b) The Xicato XOB09952715X3621 comprises a plurality of LED chips positioned around a center of a primary surface of the substrate.



(c) The Xicato XOB09952715X3621 comprises a light reflective resin frame (e.g. opaque) which is formed on the surface of the substrate and provided annularly so as to surround a mounting area in which the plurality of LED chips are provided.

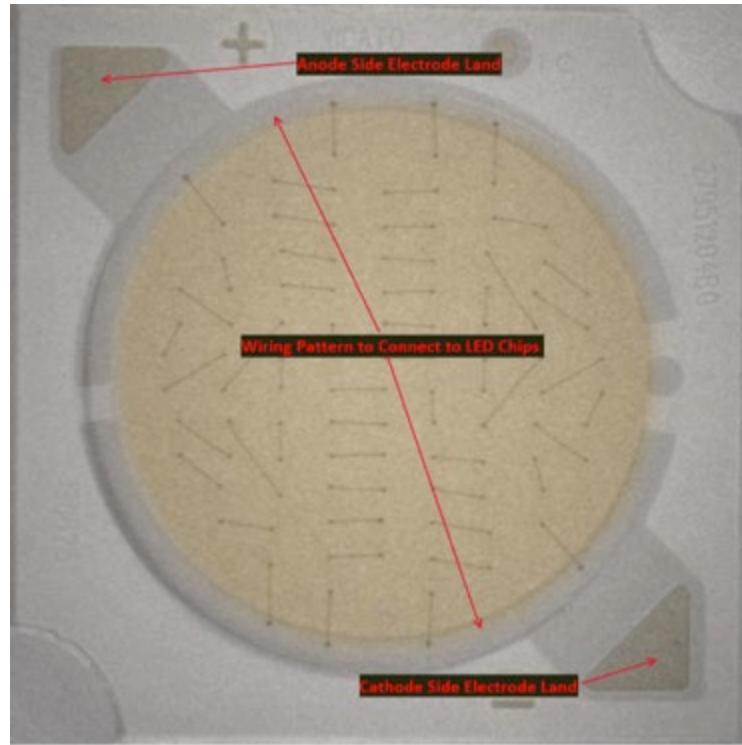


(d) The Xicato XOB09952715X3621 comprises an anode-side electrode land and a cathode-side electrode land which are electrodes to be connected to an external voltage supply. The anode-side electrode land and the cathode-side

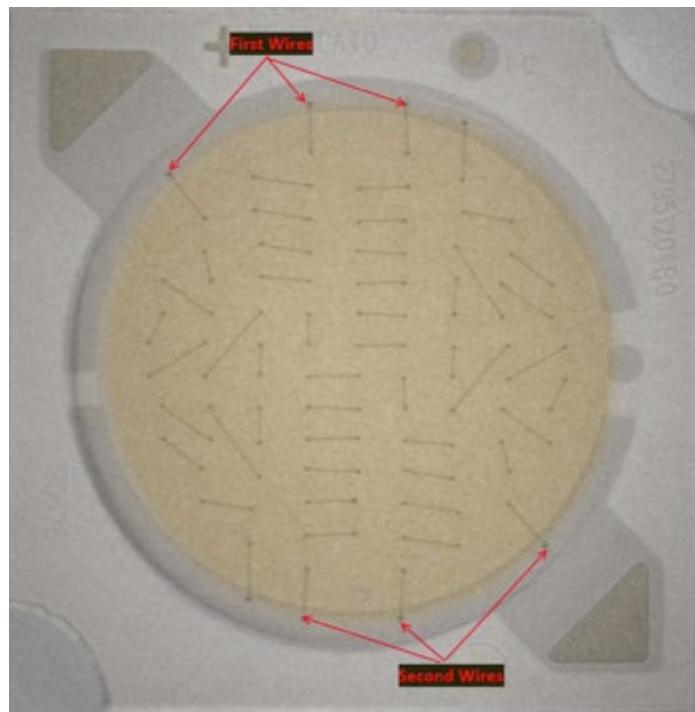
electrode land are provided outside of the resin frame and near the peripheral end of the substrate.



(e) The Xicato XOB09952715X3621 comprises a wiring pattern formed on the primary surface of the substrate. The wiring pattern includes both anode and a cathode pattern which extend from their respective electrode lands to a portion under the resin frame.



(f) The Xicato XOB09952715X3621 comprises a plurality of first wires for connecting the LED chips to the electrode wiring pattern.



51. The foregoing structure, function, and operation of the exemplary Accused Instrumentality meets all limitations of at least exemplary claim 1 of the '357 Patent.

52. Defendants' acts of making, using, selling, offering for sale and/or importing the Accused Instrumentalities are without Plaintiff's license or authorization.

53. Defendants' unauthorized actions therefore constitute direct infringement of Plaintiff's exclusive rights pursuant to 35 U.S.C. § 271(a), either literally or under the doctrine of equivalents, and Plaintiff is entitled to recover from Defendants the damages sustained as a result of Defendants' infringement of the '357 Patent in an amount to be determined at trial, which amount shall be no less than a reasonable royalty, together with interest and costs as fixed by this Court pursuant to 35 U.S.C. § 284.

54. Defendants' infringement of the '357 Patent has injured Plaintiff and Plaintiff is entitled to recover damages from Defendants.

Willful Infringement

55. Defendants have had actual knowledge of the '357 Patent at least as of service of this Complaint.

56. Notwithstanding this knowledge, Defendants have knowingly or with reckless disregard willfully infringed the '357 Patent. Defendants have thus had actual notice of infringement of the '357 Patent and acted despite an objectively high likelihood that their actions constituted infringement of Plaintiff's valid patent rights, either literally or equivalently.

57. This objective risk was either known or so obvious that it should have been known to Defendants. Accordingly, Plaintiff seeks enhanced damages pursuant to 35 U.S.C. §§ 284 and 285.

Indirect Infringement

58. At least as early as the service of this Complaint, Defendants indirectly infringe the '357 Patent within the United States by inducement under 35 U.S.C. §271(b). By failing to cease making, using, selling, importing, or offering for sale the Accused Instrumentalities at least as of the service of this Complaint, Defendants have knowingly and intentionally induced users of the Accused Instrumentalities to directly infringe one or more claims of the '357 Patent, including, by: (1) providing instructions or information, for example on publicly accessible websites, to explain how to use the Accused Instrumentalities, including the use of the Accused Instrumentalities in manners described above, which are expressly incorporated herein; and (2) touting these uses of the Accused Instrumentalities in advertisements, including but not limited to, those on websites. Use of the Accused Instrumentalities in the manner intended and/or instructed by Defendants necessarily infringes the '357 Patent.

59. At least as of the service of this Complaint, Defendants also indirectly infringe the '357 Patent within the United States by contributory infringement under 35 U.S.C. §271(c). Defendants are aware, at least as of the service of this Complaint, that components of the Accused Instrumentalities are a material and substantial part of the inventions claimed by the '357 Patent, and are designed for a use that is both patented and infringing, and have no substantial non-infringing uses. By failing to cease making, using, selling, importing, or offering for sale the Accused Instrumentalities (and components thereof) at least as of the service of this Complaint, Defendants have knowingly and intentionally contributed to direct infringement by their customers of one or more claims of the '357 Patent, including, by: (1) providing instructions or information, for example on publicly accessible websites, to explain how to use the Accused Instrumentalities,

including the use of the Accused Instrumentalities in manners described above, which are expressly incorporated herein; and (2) touting these uses of the Accused Instrumentalities in advertisements, including but not limited to, those on websites. Use of the Accused Instrumentalities in the manner intended by Defendants necessarily infringes the '357 Patent.

60. As a result of Defendants' infringement, Plaintiff has suffered monetary damages, and is entitled to an award of damages adequate to compensate it for such infringement which, by law, can be no less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

COUNT III – INFRINGEMENT OF THE '791 PATENT

61. Plaintiff incorporates by reference the allegations in all preceding paragraphs as if fully set forth herein.

62. U.S. Patent No. 9,243,791 ("the '791 Patent") is entitled "LIGHT-EMITTING DEVICE AND LIGHTING DEVICE PROVIDED WITH THE SAME" and was issued on Jan. 26, 2016. A true and correct copy of the '791 Patent is attached as **Exhibit C**.

63. The '791 Patent was filed on Apr. 2, 2014 as U.S. Patent Application No. 14/243,521.

64. Plaintiff is the owner of all rights, title, and interest in and to the '791 Patent, with the full and exclusive right to bring suit to enforce the '791 Patent, including the right to recover for past infringement.

65. The '791 Patent is valid and enforceable under United States Patent Laws.

Technical Description

66. The '791 Patent is Continuation of application No. 13/242,329, filed on Sep. 23, 2011, now Pat. No. 9,018,832, and relates to the same area of technology.

67. The technology of the '791 Patent relates to "a light-emitting device capable of ensuring an electric connection between a light-emitting element and an electrode without generating any problem in practical use, by both connecting methods with a solder and a connector, and a lighting device provided with the light-emitting device are provided. The light-emitting device according to the present invention has a plurality of LED chips, and a soldering electrode land and a connector connecting electrode land electrically connected to the chips, on a ceramic substrate. The soldering electrode land is formed of a first conductive material having a function to prevent diffusion to a solder, and the connector connecting electrode land is formed of a second conductive material having a function to prevent oxidation." **Exhibit C** at abstract.

68. The '791 Patent identifies problems in the prior art, including that "in a case where the conductor pattern to be externally connected is formed of gold (Au film) on the substrate 103, and a solder is used to externally connect the conductor pattern, the gold contained in the conductor pattern is diffused in the solder and an intermetallic compound is formed in some cases. Thus, when this phenomenon is repeatedly generated, the Au film, the Cu film, and the Ni film disappear, and an electrode land and the solder are not connected, which is inconvenient in practical use." *Id.* at 1:40-49. "In addition, a user who wants to make an external connection with a connector other than the solder cannot use the light-emitting device disclosed in the patent document 1. Meanwhile, a user who wants to make the external connection with the solder suffers from the above problem." *Id.* at 1:50-54.

69. The '791 Patent teaches a technical solution to the prior art problem, and provides "a light-emitting device capable of ensuring an electric connection between a light-emitting element and an electrode by both connecting methods with a solder and a connector without generating any problem in practical use, and a lighting device provided with the light-emitting device." *Id.* at 1:59-64.

70. The '791 Patent further provides "a light-emitting device capable of densely and compactly mounting LED chips." *Id.* at 1:59-64. "According to the light -emitting device of the present invention, since the soldering electrode land and the connector connecting electrode land are both previously provided on the substrate, either one of the connection with the solder and the connector can be employed according to a usage way of the user when the user tries to ensure the external electric connection. Thus, a versatile light-emitting device can be provided." *Id.* at 3:14-22. "In addition, in the case of the external connection with the solder, the present invention solves the problem that Au is diffused in the solder and the intermetallic compound is formed, so that electric connection cannot be ensured like the conventional case because the soldering electrode land is formed of the first conductive material having the function to prevent diffusion to the solder." *Id.* at 3:23-29.

71. The novel technical solutions taught by the '791 Patent were not well-understood, routine, or conventional at the time of the inventions of the '791 Patent.

Direct Infringement

72. On information and belief, Defendants, without authorization or license from Plaintiff, have been and are presently directly infringing the '791 Patent, either literally or equivalently, as infringement is defined by 35 U.S.C. § 271(a), including through making, using,

(including for testing purposes), selling and offering for sale methods and systems infringing one or more claims of the '791 Patent. Defendants are thus liable for direct infringement pursuant to 35 U.S.C. § 271(a). Exemplary infringing instrumentalities include the Xicato XOB09952715X3621, Xicato XOB09954015X3621, Xicato XOB14904050X3621, and all other substantially similar products.

73. Claim 1 of the '791 Patent recites:

1. A light emitting device comprising:
 - (a) a substrate;
 - (b) a resin dam formed on a primary surface of said substrate and provided so as to surround a mounting area around a center of said substrate;
 - (c) a first electrode land and a second electrode land which are electrodes to be connected to a power supply, said first and second electrode lands being provided on the primary surface of said substrate and outside said resin dam;
 - (d) a first wiring pattern provided on the primary surface of said substrate and electrically connected to said first electrode land, said first wiring pattern including a first portion located under said resin dam and curved along said resin dam;
 - (e) a second wiring pattern provided on the primary surface of said substrate and electrically connected to said second electrode land, said second wiring pattern including a second portion located under said resin dam and curved along said resin dam;

- (f) a first series of LED chips provided on the mounting area and electrically connected in series between said first wiring pattern and said second wiring pattern,
- (g) a second series of LED chips provided on the mounting area and electrically connected in series between said first wiring pattern and said second wiring pattern, a number of LED chips in said first series being same number as the LED chips in said second series;
- (h) a first wire connected between the first portion of said first wiring pattern and the LED chip at the end of said first series, said first wire being contacted with the first portion at a first contact point;
- (i) a second wire connected between the second portion of said second wiring pattern and the LED at the other end of said first series, said second wire being contacted with the second portion at a second contact point;
- (j) a third wire connected between the first portion of said first wiring pattern and the LED chip at the end of said second series, said third wire being contacted with the first portion at a third contact point;
- (k) a fourth wire connected between the second portion of said second wiring pattern and the LED at the other end of said second series, said fourth wire being contacted with the second portion at a fourth contact point, a distance between the third and fourth contact points being smaller than a distance between the first and second contact points; and

(l) a resin layer provided attaching to an inner side of said resin dam and covering said first and second series of LED chips and said first, second, third and fourth wires.

74. Defendants infringe exemplary claim 1, as a non-limiting example only, by the Xicato XOB09952715X3621:

1. The Xicato XOB09952715X3621 is a light emitting device.

XOB09952715X3621
XOB from Xicato, Inc.
LED COB, XOB, LES 9.8, 95 CRI, 2700K CCT, 1275LM
Status: Standard | Data Sheet: [A](#) | RoHS Compliance:

Description
XOB delivers Xicato's award-winning color points, unmatched color rendering, and great performance in an industry standard form factor that allows for rapid fixture design resulting in accelerated time to revenue.

The XOB specifications are within the following:

- CCT range: Xicato 2700 – 4000k color points
- Color matching: Xicato 1x2 SDCM
- Lumen output (6mm & 9.8mm): 750 – 1,600
- CRI: 80, 90, 95, Vibrant95

(<https://store.xicato.com/products/detail/xob09952715x3621-xicato-inc/646887/>).

(a) The Xicato XOB09952715X3621 comprises a substrate.



(b) The Xicato XOB09952715X3621 comprises a resin dam formed on the substrate so as to surround a mounting area around a center of the substrate.

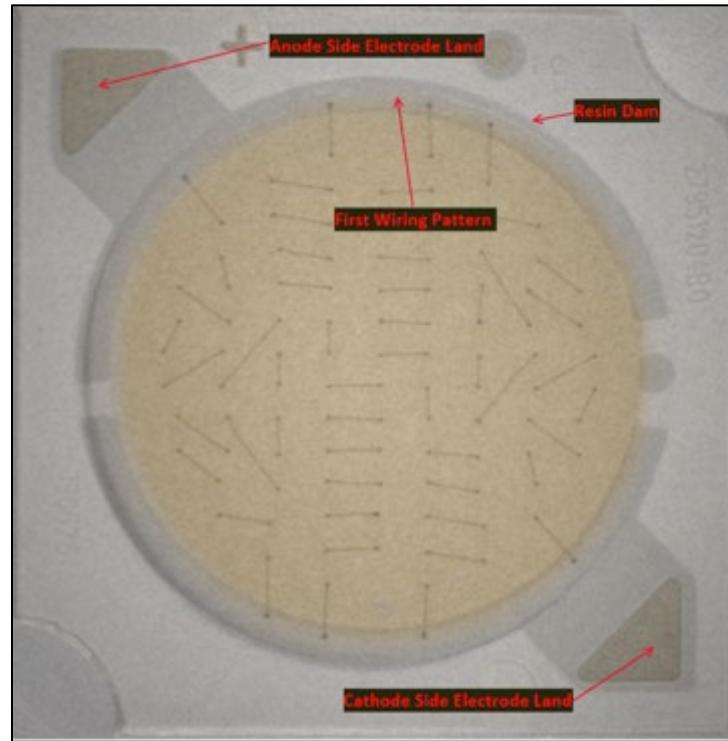


(c) The Xicato XOB09952715X3621 comprises a first and a second electrode land.

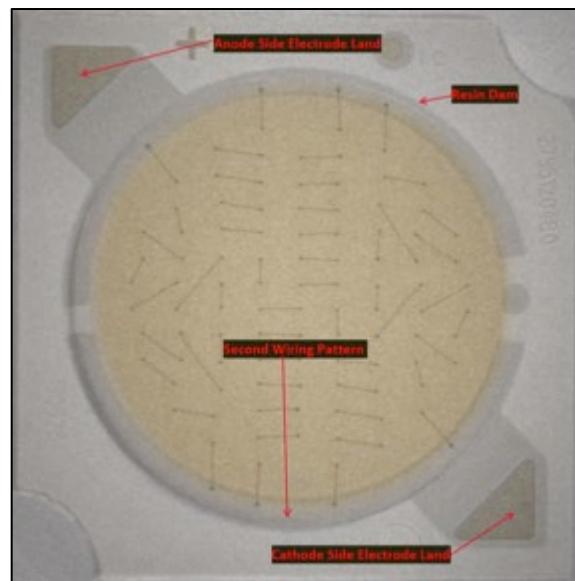
The electrode lands are connectable to a power supply and are located on the surface of the substrate.



(d) The Xicato XOB09952715X3621 comprises a first wiring pattern on the surface of the substrate which is connected to the first electrode land and a portion of which is located under the resin dam.



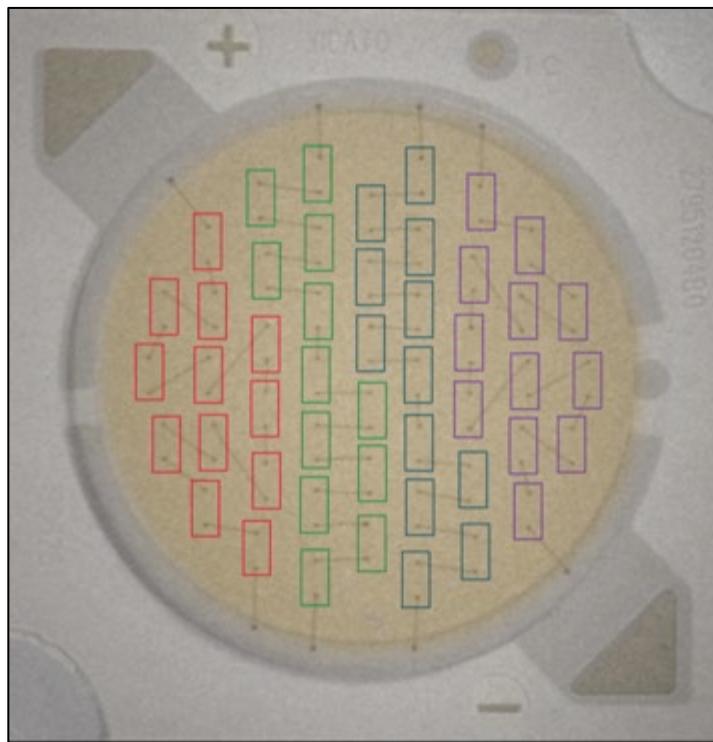
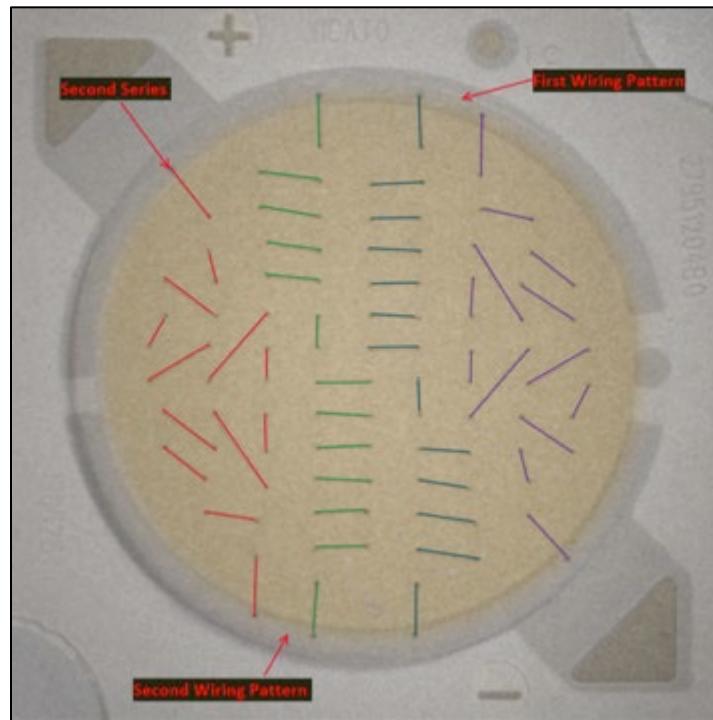
(e) The Xicato XOB09952715X3621 comprises a second wiring pattern on the surface of the substrate which is connected to the second electrode land and a portion of which is located under the resin dam.



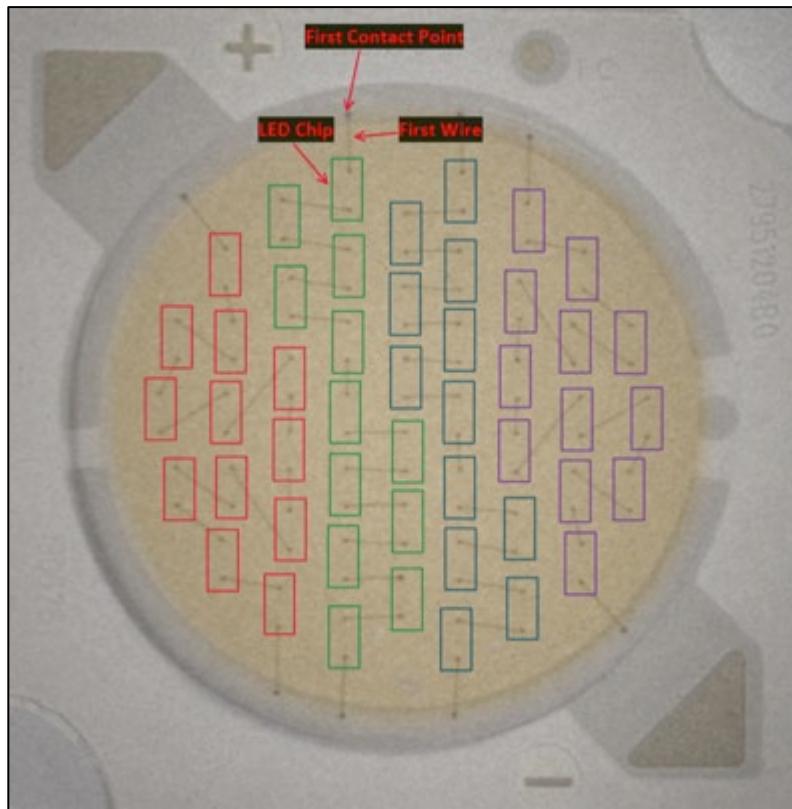
(f) The Xicato XOB09952715X3621 comprises a first series of LED chips provided on the mounting area that are electrically connected in series between the first wiring pattern and second wiring pattern.



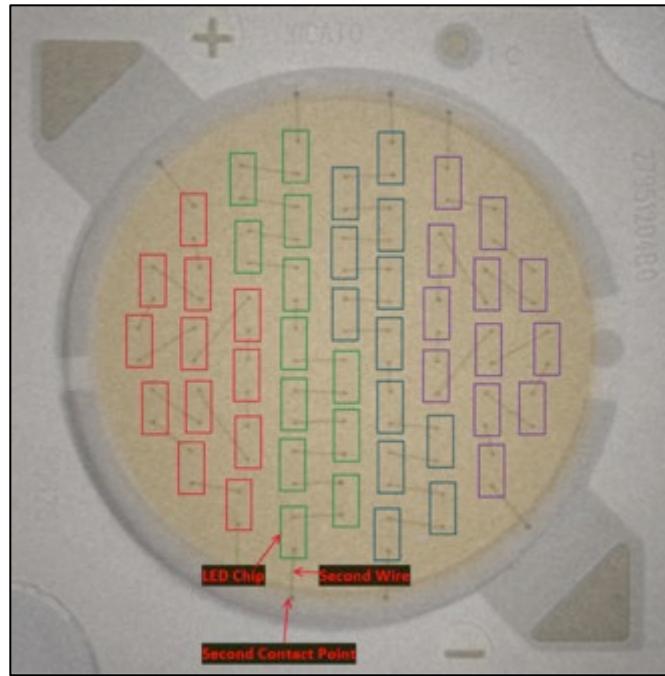
(g) The Xicato XOB09952715X3621 comprises a second series of LED chips provided on the mounting area that are electrically connected in series between the first wiring pattern and second wiring pattern. The first and second series both include twelve LED chips.



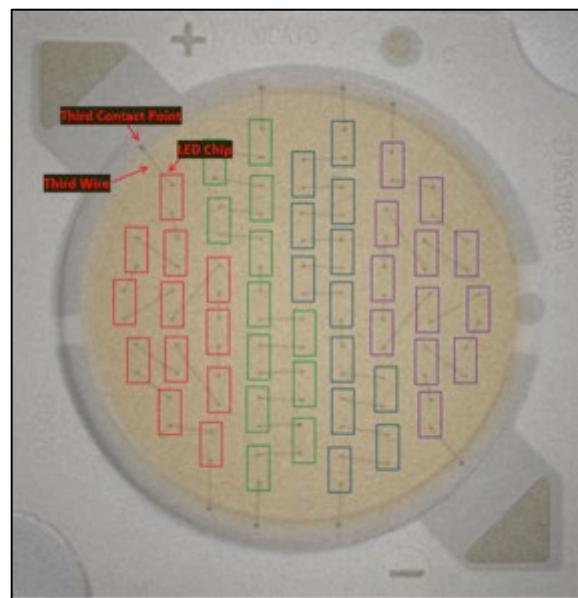
(h) The Xicato XOB09952715X3621 comprises a first wire connected between the first portion of the first wiring pattern (e.g. the portion under the resin dam) and an LED chip.



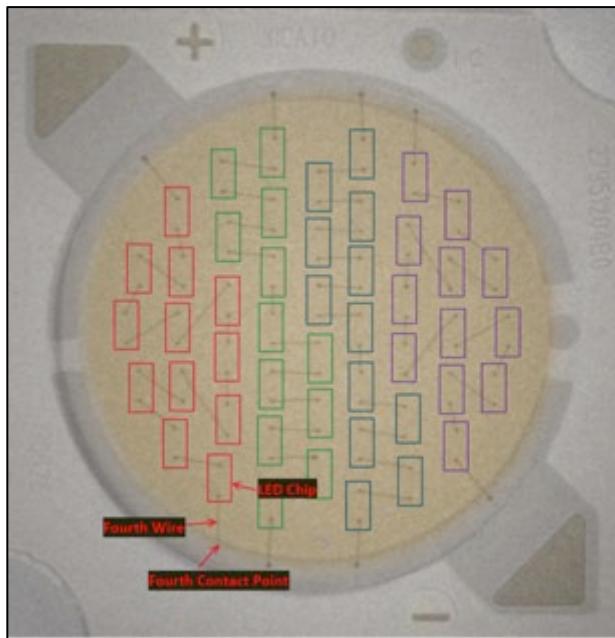
(i) The Xicato XOB09952715X3621 comprises a second wire connected between the second portion of second wiring pattern (e.g. the portion under the resin dam) and an LED at the other end of the first series.



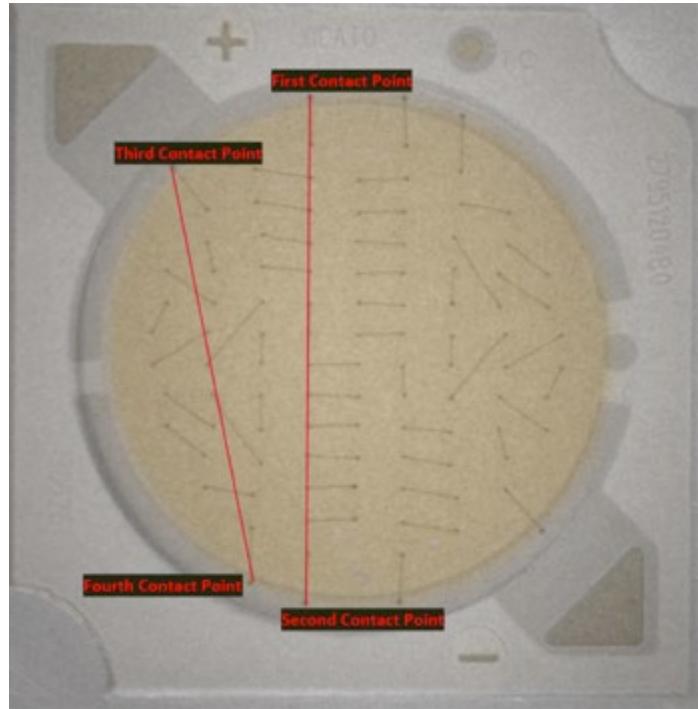
(j) The Xicato XOB09952715X3621 comprises a third wire connected between the first portion of the first wiring pattern (e.g. the portion under the resin dam) and an LED chip.



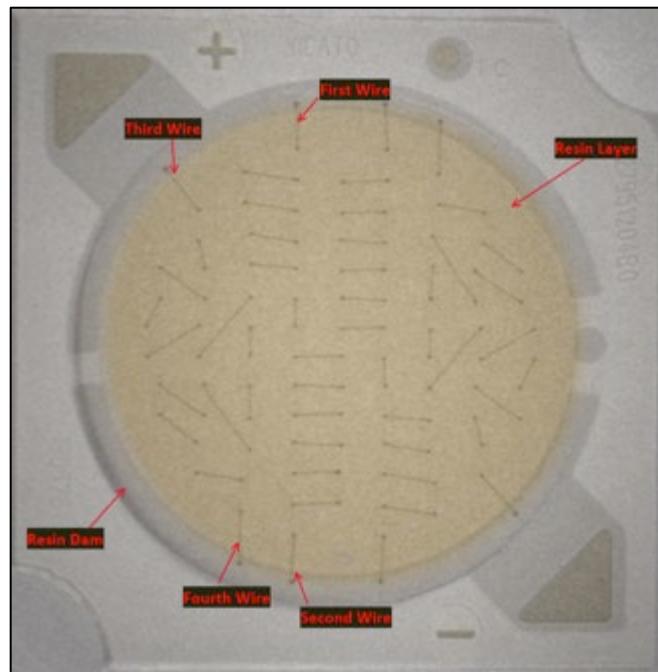
(k) The Xicato XOB09952715X3621 comprises a fourth wire connected between the second portion of the second wiring pattern (e.g. the portion under the resin dam) and an LED chip.



The distance between the third and fourth contact points is smaller than the distance between the first and second contact points.



(l) The Xicato XOB09952715X3621 comprises a resin layer attaching to the inner side of the resin dam. The resin layer covers the first and second series of LED chips and the first, second, third and fourth wires.



75. The foregoing structure, function, and operation of the exemplary Accused Instrumentality meets all limitations of at least exemplary claim 1 of the '791 Patent.

76. Defendants' acts of making, using, selling, offering for sale and/or importing the Accused Instrumentalities are without Plaintiff's license or authorization.

77. Defendants' unauthorized actions therefore constitute direct infringement of Plaintiff's exclusive rights pursuant to 35 U.S.C. § 271(a), either literally or under the doctrine of equivalents, and Plaintiff is entitled to recover from Defendants the damages sustained as a result of Defendants' infringement of the '791 Patent in an amount to be determined at trial, which amount shall be no less than a reasonable royalty, together with interest and costs as fixed by this Court pursuant to 35 U.S.C. § 284.

78. Defendants' infringement of the '791 Patent has injured Plaintiff and Plaintiff is entitled to recover damages from Defendants.

Willful Infringement

79. Defendants have had actual knowledge of the '791 Patent at least as of service of this Complaint.

80. Notwithstanding this knowledge, Defendants have knowingly or with reckless disregard willfully infringed the '791 Patent. Defendants have thus had actual notice of infringement of the '791 Patent and acted despite an objectively high likelihood that its actions constituted infringement of Plaintiff's valid patent rights, either literally or equivalently.

81. This objective risk was either known or so obvious that it should have been known to Defendants. Accordingly, Plaintiff seeks enhanced damages pursuant to 35 U.S.C. §§ 284 and 285.

Indirect Infringement

82. At least as early as the service of this Complaint, Defendants indirectly infringe the '791 Patent within the United States by inducement under 35 U.S.C. §271(b). By failing to cease making, using, selling, importing, or offering for sale the Accused Instrumentalities at least as of the service of this Complaint, Defendants have knowingly and intentionally induced users of the Accused Instrumentalities to directly infringe one or more claims of the '791 Patent, including, by: (1) providing instructions or information, for example on publicly accessible websites, to explain how to use the Accused Instrumentalities, including the use of the Accused Instrumentalities in manners described above, which are expressly incorporated herein; and (2) touting these uses of the Accused Instrumentalities in advertisements, including but not limited to, those on websites. Use of the Accused Instrumentalities in the manner intended and/or instructed by Defendants necessarily infringes the '791 Patent.

83. At least as of the service of this Complaint, Defendants also indirectly infringe the '791 Patent within the United States by contributory infringement under 35 U.S.C. §271(c). Defendants are aware, at least as of the service of this Complaint, that components of the Accused Instrumentalities are a material and substantial part of the inventions claimed by the '791 Patent, and are designed for a use that is both patented and infringing, and have no substantial non-infringing uses. By failing to cease making, using, selling, importing, or offering for sale the Accused Instrumentalities (and components thereof) at least as of the service of this Complaint, Defendants have knowingly and intentionally contributed to direct infringement by their customers of one or more claims of the '791 Patent, including, by: (1) providing instructions or information, for example on publicly accessible websites, to explain how to use the Accused Instrumentalities,

including the use of the Accused Instrumentalities in manners described above, which are expressly incorporated herein; and (2) touting these uses of the Accused Instrumentalities in advertisements, including but not limited to, those on websites. Use of the Accused Instrumentalities in the manner intended by Defendants necessarily infringes the '791 Patent.

84. As a result of Defendants' infringement, Plaintiff has suffered monetary damages, and is entitled to an award of damages adequate to compensate it for such infringement which, by law, can be no less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

COUNT IV – INFRINGEMENT OF THE '236 PATENT

85. Plaintiff incorporates by reference the allegations in all preceding paragraphs as if fully set forth herein.

86. U.S. Patent No. 9,425,236 ("the '236 Patent") is entitled "LIGHT EMITTING DEVICE" and was issued on Aug. 23, 2016. A true and correct copy of the '236 Patent is attached as **Exhibit D**.

87. The '236 Patent was filed on Mar. 31, 2015 as U.S. Patent Application No. 14/674,624.

88. Plaintiff is the owner of all rights, title, and interest in and to the '236 Patent, with the full and exclusive right to bring suit to enforce the '236 Patent, including the right to recover for past infringement.

89. The '236 Patent is valid and enforceable under United States Patent Laws.

Technical Description

90. The '236 Patent is a division of application No. 14/217,701, filed on Mar. 18, 2014, now Pat. No. 9,093,357, which is a division of application No. 13/799,373, filed on Mar. 13, 2013, now Pat. No. 8,723,195, which is a continuation of application No. 13/011,124, filed on Jan. 21, 2011, now Pat. No. 8,421,094, and relates to the same area of technology.

91. The technology of the '236 Patent relates to a light emitting device ("LED") including "a ceramic substrate; a plurality of LED chips; a printed resistor(s) connected in parallel with the plurality of LED chips; a dam resin made of a resin having a low optical transmittance; a fluorescent-material-containing resin layer; and an anode-side electrode and a cathode-side electrode, (a) which are provided on a primary surface of the ceramic substrate so as to face each other along a first direction on the primary surface and (b) which are disposed below at least one of the dam resin and the fluorescent-material-containing resin layer. With the configuration in which a plurality of LEDs, which are connected in a series-parallel connection, are provided on a substrate, it is possible to provide a light emitting device which can achieve restraining of luminance unevenness and an improvement in luminous efficiency." **Exhibit D** at abstract.

92. The '236 Patent describes the technical problems facing the prior art in detail. *Id.* at 2:35-3:21 (incorporated here by reference). The prior art problems include "that luminance becomes uneven and that luminous efficiency is decreased due to absorption of light by the electrode wiring patterns." *Id.* at 2:41-43. Other problems include large package size, complicated manufacturing process, decreased luminance due to light absorption, difficulty to provide LEDs in the package center. *Id.* at 2:35-3:21.

93. The '236 Patent teaches a technical solution for the prior art problems in detail. *Id.* at 3:25-4:22 (incorporated here by reference).

94. The '236 Patent further details the advantages of its invention. *Id.* at 4:26-5:22 (incorporated here by reference). The configuration taught by the '236 Patent “reduces distances between the light emitting elements, thereby increasing a packaging density of the light emitting elements. Consequently, it is advantageously possible to restrain that light emitted from the light emitting elements appears bright dots and to restrain in-plane luminance unevenness of the light emitting device. Furthermore, it is also advantageously possible to downsize the light emitting device.” *Id.* at 4:1-9. Undesired light absorption is reduced. *Id.* at 4:10-22.

95. The novel technical solutions taught by the '236 Patent were not well-understood, routine, or conventional at the time of the inventions of the '236 Patent.

Direct Infringement

96. On information and belief, Defendants, without authorization or license from Plaintiff, have been and are presently directly infringing the '236 Patent, either literally or equivalently, as infringement is defined by 35 U.S.C. § 271(a), including through making, using, (including for testing purposes), selling and offering for sale methods and systems infringing one or more claims of the '236 Patent. Defendants are thus liable for direct infringement pursuant to 35 U.S.C. § 271(a). Exemplary infringing instrumentalities include the Xicato XOB06902710X3321 and all other substantially similar products.

97. Claim 1 of the '236 Patent recites:

1. A light emitting device comprising:
 - (a) a ceramic substrate having a primary surface;
 - (b) a plurality of LED chips positioned around a center of the primary surface of said substrate;

- (c) a plurality of wires for connecting the plurality of LED chips with each other, each of said plurality of wires being directly connected between two of the plurality of LED chips;
- (d) a resin frame formed on the primary surface of said substrate and provided annularly so as to surround a mounting area in which the plurality of LED chips are provided, said resin frame having light reflectivity, and wherein the resin frame has a circular shape in a top view and a dome shape in a cross-sectional view;
- (e) a sealing resin provided on the mounting area and inside said resin frame, and wherein the top of said sealing resin is higher than the top of said resin frame;
- (f) an anode-side electrode land and a cathode-side electrode land which are electrodes to be connected to an external voltage supply, and are electrically connected to the plurality of LED chips, said anode-side electrode land and said cathode-side electrode land being provided on the primary surface of said substrate and outside said resin frame; and
- (g) an electrode wiring pattern on the primary surface of the substrate including (i) an anode pattern extending from the anode-side electrode land to a portion under said resin frame, and (ii) a cathode pattern extending from the cathode-side electrode land to the other portion under the resin frame, so as to electrically connect the plurality of LED chips to the anode-side electrode land and the cathode-side electrode land.

98. Defendants infringe exemplary claim 1, as a non-limiting example only, by the Xicato XOB06902710X3321:

1. Xicato XOB06902710X3321 is a light emitting device.

XOB06902710X3321
XOB from Xicato, Inc.
LED COB, XOB, LES 6, 90 CRI, 2700K CCT, 850LM

Status: Standard | **Data Sheet:**  | **RoHS Compliance:**

Description:
XOB delivers Xicato's award-winning color points, unmatched color rendering, and great performance in an industry standard form factor that allows for rapid fixture design resulting in accelerated time to revenue.

The XOB specifications are within the following:

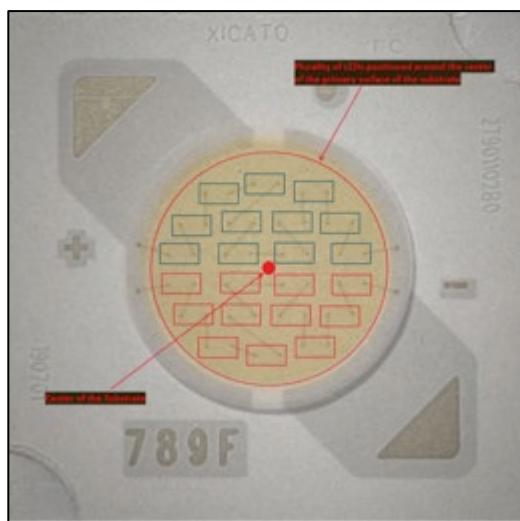
- CCT range: Xicato 2700 – 4000k color points
- Color matching: Xicato 1x2 SDCM
- Lumen output (6mm & 9.8mm): 750 – 1,600
- CRI: 80, 90, 95, Vibrant95

(<https://store.xicato.com/products/detail/xob06902710x3321-xicato-inc/646874/>).

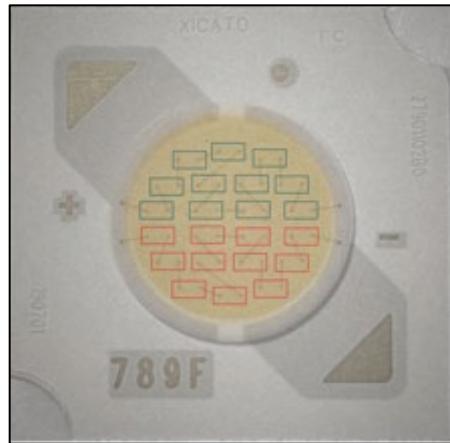
(a) The Xicato XOB06902710X3321 comprises a ceramic substrate having a primary surface (e.g. top surface).



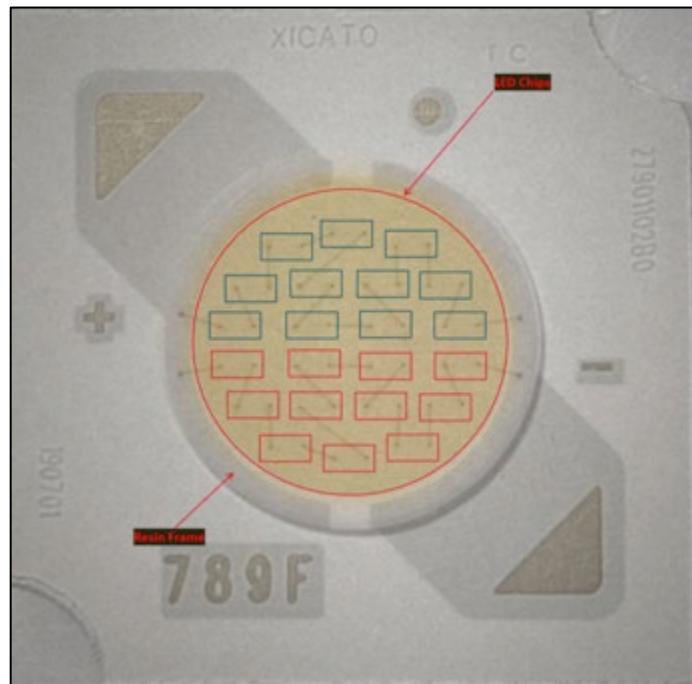
(b) The Xicato XOB06902710X3321 comprises a plurality of LED chips positioned around a center of the primary surface of the substrate.



(c) The Xicato XOB06902710X3321 comprises a plurality of wires for connecting the plurality of LED chips with each other.



(d) The Xicato XOB06902710X3321 comprises a resin frame formed on the primary surface of the substrate. The resin frame is provided annularly so as to surround a mounting area in which the plurality of LED chips are provided. The resin frame has a high light reflectivity (e.g. opaque) and a circular shape in top view.





The resin frame has a dome shape in cross sectional view.



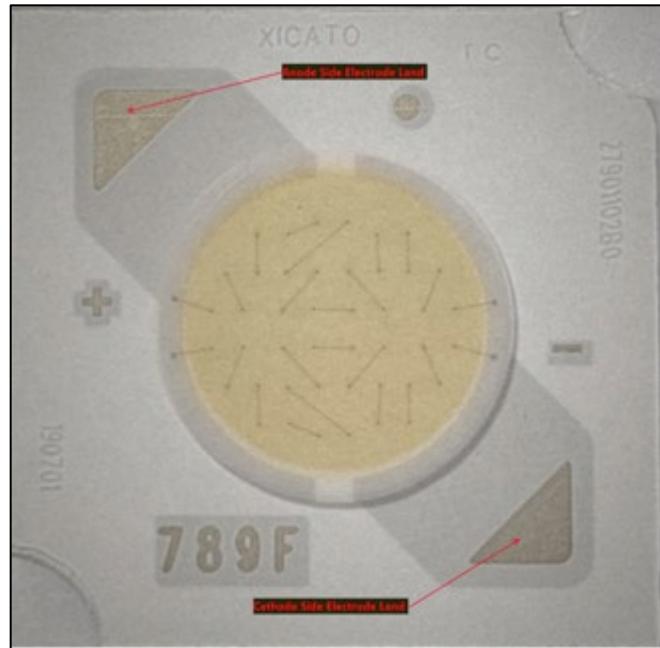
(e) The Xicato XOB06902710X3321 comprises a sealing resin provided on the mounting area and inside said resin frame.



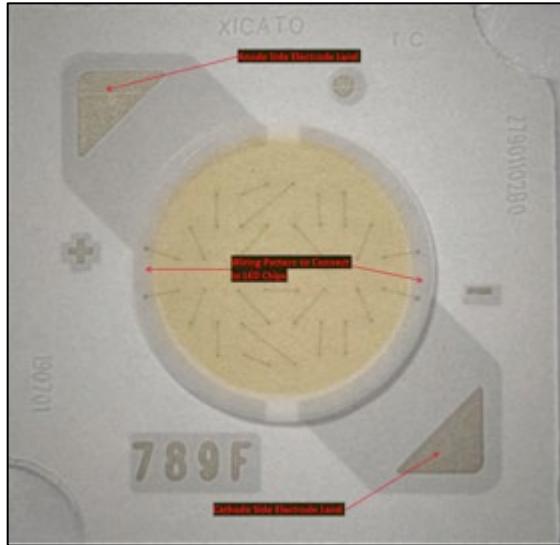
The top of the sealing resin is higher than the top of the resin frame.



(f) The Xicato XOB06902710X3321 comprises anode and cathode side electrode lands which are electrically connected to the plurality of LED chips. The electrode lands are provided on the primary surface and outside of the resin frame.



(g) The Xicato XOB06902710X3321 comprises an electrode wiring pattern on the primary surface of the substrate. The anode and cathode side patterns extend from their respective electrode lands under the resin frame and electrically connect to the LED chips.



99. The foregoing structure, function, and operation of the exemplary Accused Instrumentality meets all limitations of at least exemplary claim 1 of the '236 Patent.

100. Defendants' acts of making, using, selling, offering for sale and/or importing the Accused Instrumentalities are without Plaintiff's license or authorization.

101. Defendants' unauthorized actions therefore constitute direct infringement of Plaintiff's exclusive rights pursuant to 35 U.S.C. § 271(a), either literally or under the doctrine of equivalents, and Plaintiff is entitled to recover from Defendants the damages sustained as a result of Defendants' infringement of the '236 Patent in an amount to be determined at trial, which amount shall be no less than a reasonable royalty, together with interest and costs as fixed by this Court pursuant to 35 U.S.C. § 284.

102. Defendants' infringement of the '236 Patent has injured Plaintiff and Plaintiff is entitled to recover damages from Defendants.

Willful Infringement

103. Defendants have had actual knowledge of the '236 Patent at least as of service of this Complaint.

104. Notwithstanding this knowledge, Defendants have knowingly or with reckless disregard willfully infringed the '236 Patent. Defendants have thus had actual notice of infringement of the '236 Patent and acted despite an objectively high likelihood that its actions constituted infringement of Plaintiff's valid patent rights, either literally or equivalently.

105. This objective risk was either known or so obvious that it should have been known to Defendants. Accordingly, Plaintiff seeks enhanced damages pursuant to 35 U.S.C. §§ 284 and 285.

Indirect Infringement

106. At least as early as the service of this Complaint, Defendants indirectly infringe the '236 Patent within the United States by inducement under 35 U.S.C. §271(b). By failing to cease making, using, selling, importing, or offering for sale the Accused Instrumentalities at least as of the service of this Complaint, Defendants have knowingly and intentionally induced users of the Accused Instrumentalities to directly infringe one or more claims of the '236 Patent, including, by: (1) providing instructions or information, for example on publicly accessible websites, to explain how to use the Accused Instrumentalities, including the use of the Accused Instrumentalities in manners described above, which are expressly incorporated herein; and (2) touting these uses of the Accused Instrumentalities in advertisements, including but not limited to, those on websites. Use of the Accused Instrumentalities in the manner intended and/or instructed by Defendants necessarily infringes the '236 Patent.

107. At least as of the service of this Complaint, Defendants also indirectly infringe the '236 Patent within the United States by contributory infringement under 35 U.S.C. §271(c). Defendants are aware, at least as of the service of this Complaint, that components of the Accused Instrumentalities are a material and substantial part of the inventions claimed by the '236 Patent, and are designed for a use that is both patented and infringing, and have no substantial non-infringing uses. By failing to cease making, using, selling, importing, or offering for sale the Accused Instrumentalities (and components thereof) at least as of the service of this Complaint, Defendants have knowingly and intentionally contributed to direct infringement by their customers of one or more claims of the '236 Patent, including, by: (1) providing instructions or information, for example on publicly accessible websites, to explain how to use the Accused Instrumentalities, including the use of the Accused Instrumentalities in manners described above, which are expressly incorporated herein; and (2) touting these uses of the Accused Instrumentalities in advertisements, including but not limited to, those on websites. Use of the Accused Instrumentalities in the manner intended by Defendants necessarily infringes the '236 Patent.

108. As a result of Defendants' infringement, Plaintiff has suffered monetary damages, and is entitled to an award of damages adequate to compensate it for such infringement which, by law, can be no less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

COUNT V – INFRINGEMENT OF THE '309 PATENT

109. Plaintiff incorporates by reference the allegations in all preceding paragraphs as if fully set forth herein.

110. U.S. Patent No. 9,484,309 (“the ’309 Patent”) is entitled “LIGHT EMITTING DEVICE AND METHOD FOR MANUFACTURING LIGHT EMITTING DEVICE” and was issued on Nov. 1, 2016. A true and correct copy of the ’309 Patent is attached as **Exhibit E**.

111. The ’309 Patent was filed on Jul. 11, 2013 as U.S. Patent Application No. 14/419,841.

112. Plaintiff is the owner of all rights, title, and interest in and to the ’309 Patent, with the full and exclusive right to bring suit to enforce the ’309 Patent, including the right to recover for past infringement.

113. The ’309 Patent is valid and enforceable under United States Patent Laws.

Technical Description

114. The technology of the ’309 Patent relates to a light emitting device (“LED”) including “light emitting elements, conductor wirings, and alignment marks formed on a substrate where the alignment marks and the conductor wirings are formed by printing.” **Exhibit E** at abstract.

115. The ’309 Patent describes the technical problems facing the prior art in detail. *Id.* at 1:64-2:52 (incorporated here by reference). The prior art problems include “(A) Freedom in the positioning of an alignment mark is limited. (B) If an alignment mark is covered by a light reflecting resin frame, the resin frame needs a greater width and increases the area of the light emitting device. (C) If an alignment mark is divided into small alignment marks, an additional step such as etching is required. (D) If an alignment mark is formed integrally with the wiring pattern, the alignment mark is formed outside the wiring pattern and oriented outwardly.” *Id.* at 2:5-14.

116. The '309 Patent teaches a technical solution for the prior art problems in detail. *Id.* at 2:56-4:38 (incorporated here by reference). "In order to solve the above-mentioned problems, a light emitting device according to the present invention includes: a substrate; a light emitting element disposed on the substrate; a conductor wiring disposed on the substrate; and an alignment mark disposed on the substrate. In this light emitting device, the alignment mark and the conductor wiring are formed by printing." *Id.* at 2:56-62. "Since the alignment mark is formed by printing, it is possible to avoid the defects due to uneven plating and to provide a clearly readable alignment mark. Besides, printing of the alignment mark does not require a support for passing an electric current through the alignment mark portion during the plating. Hence, an alignment mark which has a small area and a high freedom of positioning can be formed easily." *Id.* at 2:63-3:3. "Further, since the alignment mark and the conductor wiring are both formed by printing, it is possible to form the alignment mark and the conductor wiring simultaneously, and thereby to avoid an additional manufacture step." *Id.* at 3:4-7.

117. The '309 Patent further details the advantages of its invention. *Id.* at 4:26-5:22 (incorporated here by reference). "Since the present invention forms an alignment mark by printing, it is possible to avoid the defects due to uneven plating and to provide a clearly readable alignment mark. It is also possible to form an alignment mark which has a small area and a high freedom of positioning easily." *Id.* at 4:42-46.

118. The novel technical solutions taught by the '309 Patent were not well-understood, routine, or conventional at the time of the inventions of the '309 Patent.

Direct Infringement

119. On information and belief, Defendants, without authorization or license from Plaintiff, have been and are presently directly infringing the '309 Patent, either literally or equivalently, as infringement is defined by 35 U.S.C. § 271(a), including through making, using, (including for testing purposes), selling and offering for sale methods and systems infringing one or more claims of the '309 Patent. Defendants are thus liable for direct infringement pursuant to 35 U.S.C. § 271(a). Exemplary infringing instrumentalities include the Xicato XOB09952715X3621, Xicato XOB09954015X3621, Xicato XOB14904050X3621, and all other substantially similar products.

120. Claim 1 of the '309 Patent recites:

1. A light emitting device comprising:
 - (a) a substrate;
 - (b) a light emitting element disposed on the substrate by means of an adhesive resin;
 - (c) a conductor wiring disposed on the substrate, the conductor wiring being formed to surround a mounting area of the light emitting element and electrically connected with a wire;
 - (d) an alignment mark disposed on the substrate, and
 - (e) a light reflecting resin frame formed to surround the mounting area of the light emitting element,
 - (f) wherein the conductor wiring is completely covered by the light reflecting resin frame,

- (g) wherein the alignment mark and the conductor wiring are formed by printing,
- (h) wherein the alignment mark is disposed outside the conductor wiring, and
 - wherein the alignment mark is not covered, partially or totally, by the light reflecting resin frame.

121. Defendants infringe exemplary claim 1, as a non-limiting example only, by the Xicato XOB09952715X3621:

1. The Xicato XOB09952715X3621 is a light emitting device.

XOB09952715X3621
XOB from Xicato, Inc.
LED COB, XOB, LES 9.8, 95 CRI, 2700K CCT, 1275LM
Status: Standard | Data Sheet: [Data Sheet](#) | RoHS Compliance:

Description
XOB delivers Xicato's award-winning color points, unmatched color rendering, and great performance in an industry standard form factor that allows for rapid fixture design resulting in accelerated time to revenue.

The XOB specifications are within the following:

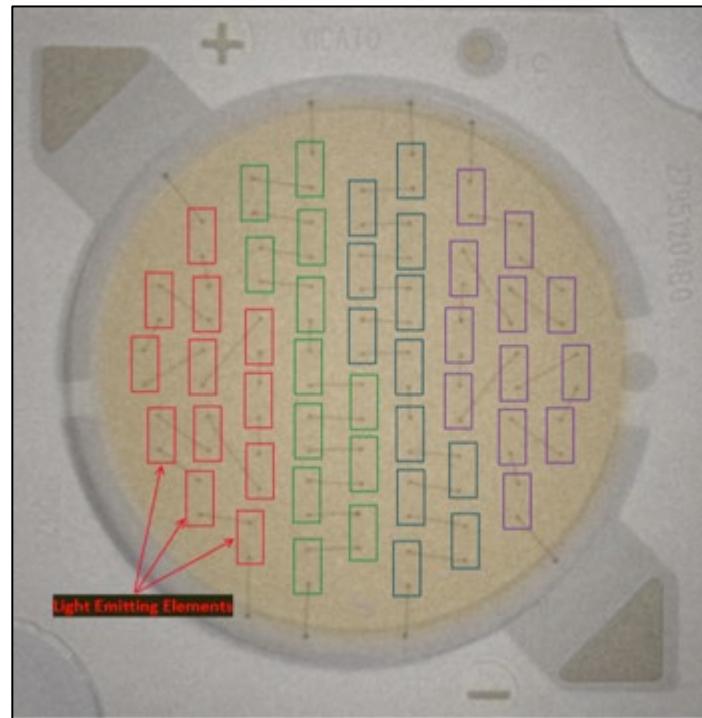
- CCT range: Xicato 2700 – 4000k color points
- Color matching: Xicato 1x2 SDCM
- Lumen output (6mm & 9.8mm): 750 – 1,600
- CRI: 80, 90, 95, Vibrant95

(<https://store.xicato.com/products/detail/xob09952715x3621-xicato-inc/646887/>).

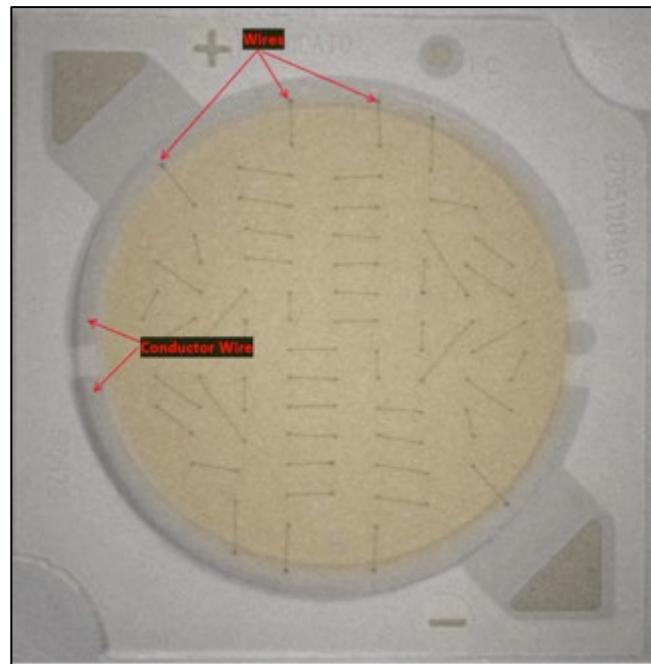
- (a) The Xicato XOB09952715X3621 comprises a substrate.



(b) The Xicato XOB09952715X3621 comprises a light emitting element disposed on the substrate by means of an adhesive resin.



(c) The Xicato XOB09952715X3621 comprises a conductor wiring disposed on the substrate. The conductor wiring forms the mounting area of the light emitting elements and is electrically connected with a wire.



(d) The Xicato XOB09952715X3621 comprises an alignment mark disposed on the substrate.



(e) The Xicato XOB09952715X3621 comprises a light reflecting resin frame formed to surround the mounting area of the light emitting elements.



(f) The Xicato XOB09952715X3621 comprises conductor wiring which is completely covered by the light reflecting resin frame.



(g) The Xicato XOB09952715X3621 comprises an alignment mark and conductor wiring that are formed by printing.



(h) The Xicato XOB09952715X3621 comprises an alignment mark which is disposed outside of the conductor wiring and the alignment mark is not covered by the light reflecting resin frame.



122. The foregoing structure, function, and operation of the exemplary Accused Instrumentality meets all limitations of at least exemplary claim 1 of the '309 Patent.

123. Defendants' acts of making, using, selling, offering for sale and/or importing the Accused Instrumentalities are without Plaintiff's license or authorization.

124. Defendants' unauthorized actions therefore constitute direct infringement of Plaintiff's exclusive rights pursuant to 35 U.S.C. § 271(a), either literally or under the doctrine of equivalents, and Plaintiff is entitled to recover from Defendants the damages sustained as a result of Defendants' infringement of the '309 Patent in an amount to be determined at trial, which amount shall be no less than a reasonable royalty, together with interest and costs as fixed by this Court pursuant to 35 U.S.C. § 284.

125. Defendants' infringement of the '309 Patent has injured Plaintiff and Plaintiff is entitled to recover damages from Defendants.

Willful Infringement

126. Defendants have had actual knowledge of the '309 Patent at least as of service of this Complaint.

127. Notwithstanding this knowledge, Defendants have knowingly or with reckless disregard willfully infringed the '309 Patent. Defendants have thus had actual notice of infringement of the '309 Patent and acted despite an objectively high likelihood that its actions constituted infringement of Plaintiff's valid patent rights, either literally or equivalently.

128. This objective risk was either known or so obvious that it should have been known to Defendants. Accordingly, Plaintiff seeks enhanced damages pursuant to 35 U.S.C. §§ 284 and 285.

Indirect Infringement

129. At least as early as the service of this Complaint, Defendants indirectly infringe the '309 Patent within the United States by inducement under 35 U.S.C. §271(b). By failing to cease making, using, selling, importing, or offering for sale the Accused Instrumentalities at least as of the service of this Complaint, Defendants have knowingly and intentionally induced users of the Accused Instrumentalities to directly infringe one or more claims of the '309 Patent, including, by: (1) providing instructions or information, for example on publicly accessible websites, to explain how to use the Accused Instrumentalities, including the use of the Accused Instrumentalities in manners described above, which are expressly incorporated herein; and (2) touting these uses of the Accused Instrumentalities in advertisements, including but not limited to, those on websites. Use of the Accused Instrumentalities in the manner intended and/or instructed by Defendants necessarily infringes the '309 Patent.

130. At least as of the service of this Complaint, Defendants also indirectly infringe the '309 Patent within the United States by contributory infringement under 35 U.S.C. §271(c). Defendants are aware, at least as of the service of this Complaint, that components of the Accused Instrumentalities are a material and substantial part of the inventions claimed by the '309 Patent, and are designed for a use that is both patented and infringing, and have no substantial non-infringing uses. By failing to cease making, using, selling, importing, or offering for sale the Accused Instrumentalities (and components thereof) at least as of the service of this Complaint, Defendants have knowingly and intentionally contributed to direct infringement by their customers of one or more claims of the '309 Patent, including, by: (1) providing instructions or information, for example on publicly accessible websites, to explain how to use the Accused Instrumentalities, including the use of the Accused Instrumentalities in manners described above, which are expressly incorporated herein; and (2) touting these uses of the Accused Instrumentalities in advertisements, including but not limited to, those on websites. Use of the Accused Instrumentalities in the manner intended by Defendants necessarily infringes the '309 Patent.

131. As a result of Defendants' infringement, Plaintiff has suffered monetary damages, and is entitled to an award of damages adequate to compensate it for such infringement which, by law, can be no less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

COUNT VI – INFRINGEMENT OF THE '942 PATENT

132. Plaintiff incorporates by reference the allegations in all preceding paragraphs as if fully set forth herein.

133. U.S. Patent No. 9,679,942 (“the ’942 Patent”) is entitled “LIGHT EMITTING DEVICE” and was issued on Jun. 13, 2017. A true and correct copy of the ’942 Patent is attached as **Exhibit F**.

134. The ’942 Patent was filed on Jun. 21, 2016 as U.S. Patent Application No. 15/187,945.

135. Plaintiff is the owner of all rights, title, and interest in and to the ’942 Patent, with the full and exclusive right to bring suit to enforce the ’942 Patent, including the right to recover for past infringement.

136. The ’942 Patent is valid and enforceable under United States Patent Laws.

Technical Description

137. The ’942 Patent is a division of application No. 14/674,624, filed on Mar. 31, 2015, now Pat. No. 9,425,236, which is a division of application No. 14/217,701, filed on Mar. 18, 2014, now Pat. No. 9,093,357, which is a division of application No. 13/799,373, filed on Mar. 13, 2013, now Pat. No. 8,723,195, which is a continuation of application No. 13/011,124, filed on Jan. 21, 2011, now Pat. No. 8,421,094, and relates to the same area of technology.

138. The technology of the ’942 Patent relates to a light emitting device (“LED”) including “a ceramic substrate; a plurality of LED chips; a printed resistor(s) connected in parallel with the plurality of LED chips; a dam resin made of a resin having a low optical transmittance; a fluorescent-material-containing resin layer; and an anode-side electrode and a cathode-side electrode, (a) which are provided on a primary surface of the ceramic substrate so as to face each other along a first direction on the primary surface and (b) which are disposed below at least one of the dam resin and the fluorescent-material-containing resin layer. With the configuration in

which a plurality of LEDs, which are connected in a series-parallel connection, are provided on a substrate, it is possible to provide a light emitting device which can achieve restraining of luminance unevenness and an improvement in luminous efficiency.” **Exhibit F** at abstract.

139. The ’942 Patent describes the technical problems facing the prior art in detail. *Id.* at 2:45-3:32 (incorporated here by reference). The prior art problems include “that luminance becomes uneven and that luminous efficiency is decreased due to absorption of light by the electrode wiring patterns.” *Id.* at 2:50-52. Other problems include large package size, complicated manufacturing process, decreased luminance due to light absorption, difficulty to provide LEDs in the package center. *Id.* at 2:45-3:32.

140. The ’942 Patent teaches a technical solution for the prior art problems in detail. *Id.* at 3:36-4:35 (incorporated here by reference).

141. The ’942 Patent further details the advantages of its invention. *Id.* at 4:39-5:48 (incorporated here by reference). The configuration taught by the ’942 Patent “reduces distances between the light emitting elements, thereby increasing a packaging density of the light emitting elements. Consequently, it is advantageously possible to restrain that light emitted from the light emitting elements appears bright dots and to restrain in-plane luminance unevenness of the light emitting device. Furthermore, it is also advantageously possible to downsize the light emitting device.” *Id.* at 4:17-24. Undesired light absorption is reduced. *Id.* at 5:25-29.

142. The novel technical solutions taught by the ’942 Patent were not well-understood, routine, or conventional at the time of the inventions of the ’942 Patent.

Direct Infringement

143. On information and belief, Defendants, without authorization or license from Plaintiff, have been and are presently directly infringing the '942 Patent, either literally or equivalently, as infringement is defined by 35 U.S.C. § 271(a), including through making, using, (including for testing purposes), selling and offering for sale methods and systems infringing one or more claims of the '942 Patent. Defendants are thus liable for direct infringement pursuant to 35 U.S.C. § 271(a). Exemplary infringing instrumentalities include the Xicato XOB09952715X3621, Xicato XOB09954015X3621, Xicato XOB14904050X3621, and all other substantially similar products.

144. Claim 1 of the '942 Patent recites:

1. A light emitting device comprising:
 - (a) a substrate;
 - (b) a plurality of LED chips positioned around a center of a primary surface of the substrate;
 - (c) a resin frame formed on the primary surface of said substrate and provided annularly so as to surround a mounting area in which said plurality of LED chips are provided;
 - (d) an anode-side electrode land and a cathode-side electrode land which are electrodes to be connected to an external voltage supply of said light emitting device, the anode-side electrode land and the cathode-side electrode land being provided on the primary surface of the substrate and outside said resin frame; and

- (e) an electrode wiring pattern formed on the primary surface of said substrate including (i) a first anode pattern and (ii) a first cathode pattern, the first anode pattern and the first cathode pattern electrically connecting the plurality of LED chips to the anode-side electrode land and the cathode-side electrode land,
- (f) the plurality of LED chips including a first chip, a second chip, a third chip, and a fourth chip,
- (g) the first chip, the second chip, the third chip, and the fourth chip being electrically connected in series so as to constitute each of at least one series circuit,
- (h) the light emitting device further comprising:
 - (i) a first wire connecting an anode electrode of the first chip and the first anode pattern directly to each other;
 - (j) a second wire connecting a cathode electrode of the first chip and an anode electrode of the second chip directly to each other;
 - (k) a third wire connecting a cathode electrode of the third chip and an anode electrode of the fourth chip directly to each other; and
 - (l) a fourth wire connecting a cathode electrode of the fourth chip and the first cathode pattern directly to each other,
- (m) the first wire having a length larger than that of the second wire,
- (n) the fourth wire having a length larger than that of the third wire.

145. Defendants infringe exemplary claim 1, as a non-limiting example only, by the

Xicato XOB09952715X3621:

1. The Xicato XOB09952715X3621 is a light emitting device.

XOB09952715X3621

XOB from Xicato, Inc.

LED COB, XOB, LES 9.8, 95 CRI, 2700K CCT, 1275LM

Status: Standard | Data Sheet: [Data Sheet](#) | RoHS Compliance: [RoHS](#)

Description

XOB delivers Xicato's award-winning color points, unmatched color rendering, and great performance in an industry standard form factor that allows for rapid fixture design resulting in accelerated time to revenue.

The XOB specifications are within the following:

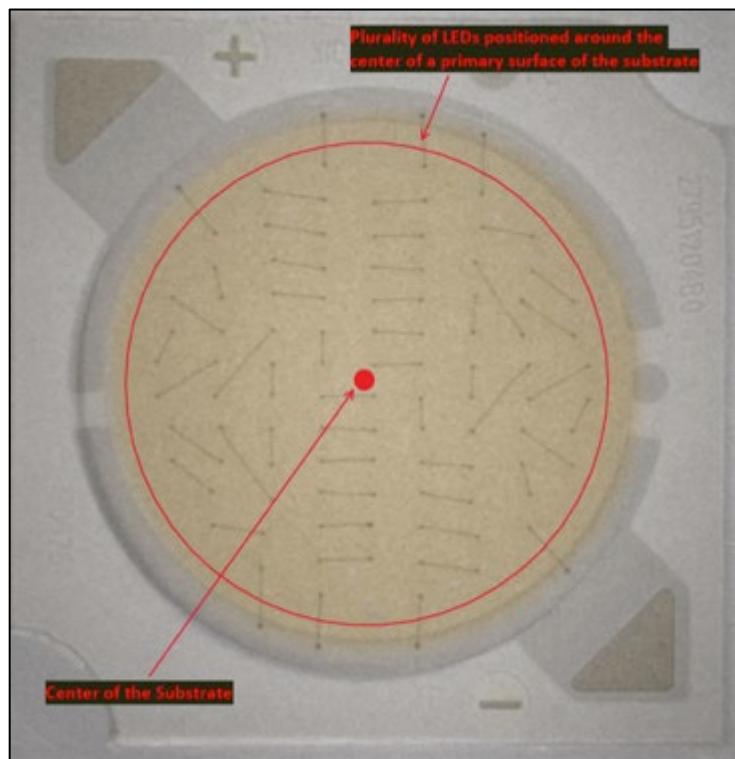
- CCT range: Xicato 2700 – 4000k color points
- Color matching: Xicato 1x2 SDCM
- Lumen output (6mm & 9.8mm): 750 – 1,600
- CRI: 80, 90, 95, Vibrant95

(<https://store.xicato.com/products/detail/xob09952715x3621-xicato-inc/646887/>).

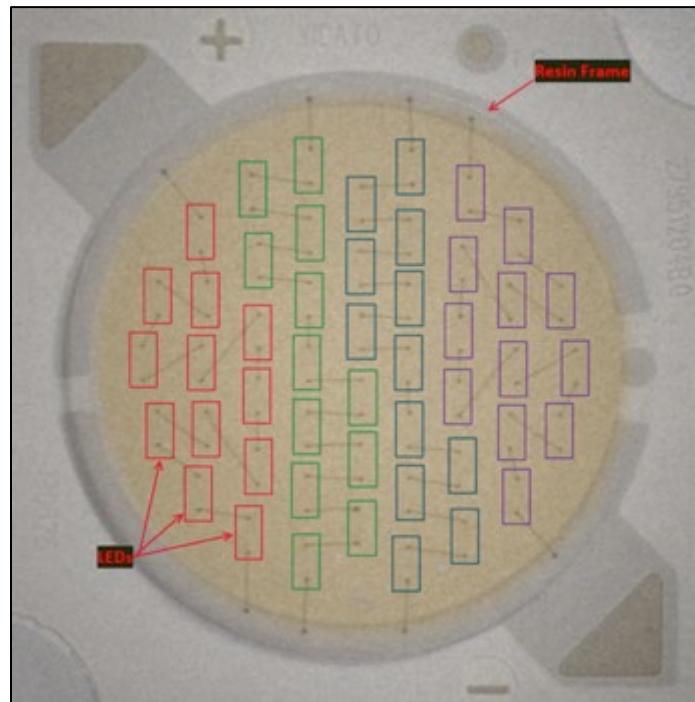
(a) The Xicato XOB09952715X3621 comprises a substrate.



(b) The Xicato XOB09952715X3621 comprises a plurality of LED chips positioned around a center of a primary surface of the substrate.



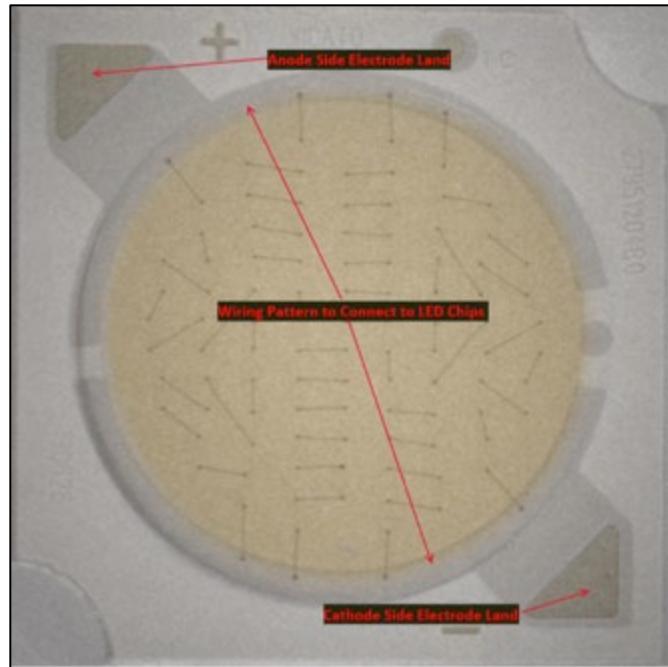
(c) The Xicato XOB09952715X3621 comprises a resin formed on the primary surface of the substrate and provided annularly so as to surround a mounting area in which the plurality of LED chips are provided.



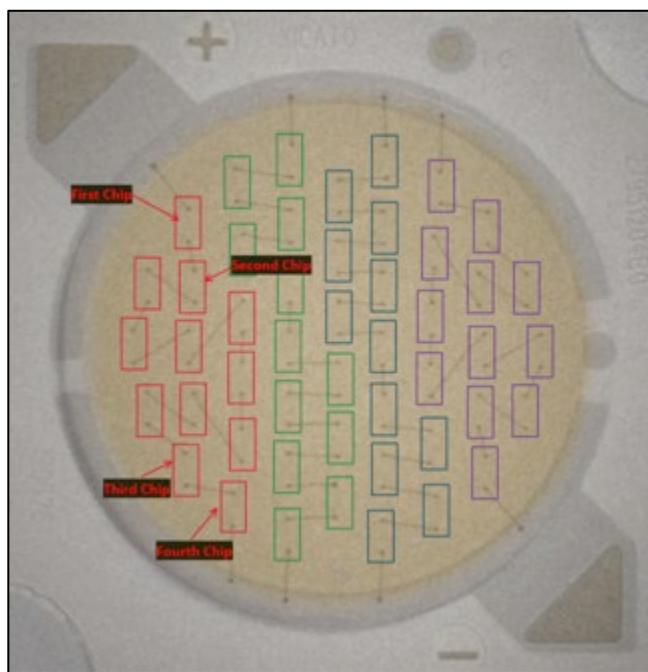
(d) The Xicato XOB09952715X3621 comprises an anode and a cathode side electrode land. The electrode lands are connected to an external voltage supply and are provided outside of the resin frame.



(e) The Xicato XOB09952715X3621 comprises an electrode wiring pattern formed on the primary surface of the substrate which includes an anode and a cathode pattern. The anode and cathode patterns electrically connect to the LED chips.



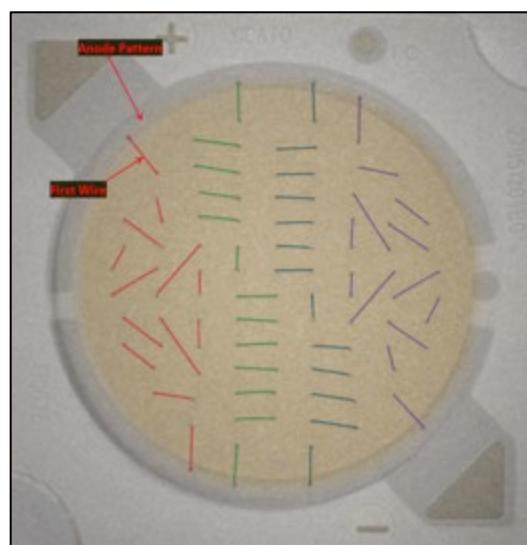
(f) The Xicato XOB09952715X3621 comprises a plurality of LED chips including a first, second, third, and fourth chip.



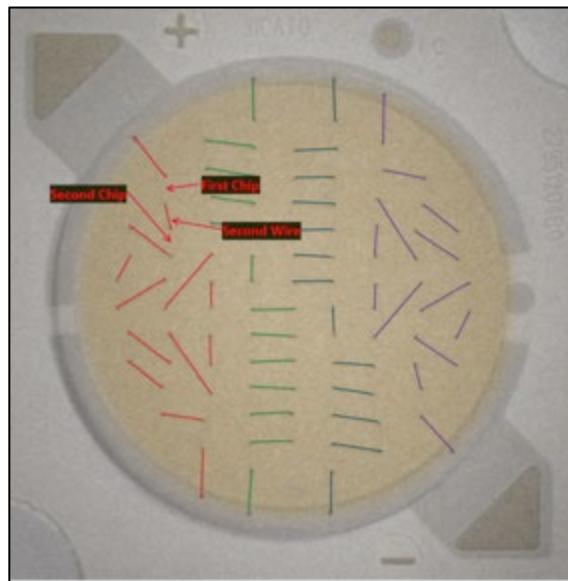
(g) The Xicato XOB09952715X3621 comprises a first, second, third and fourth chips which are connected in series and constitute a series circuit.



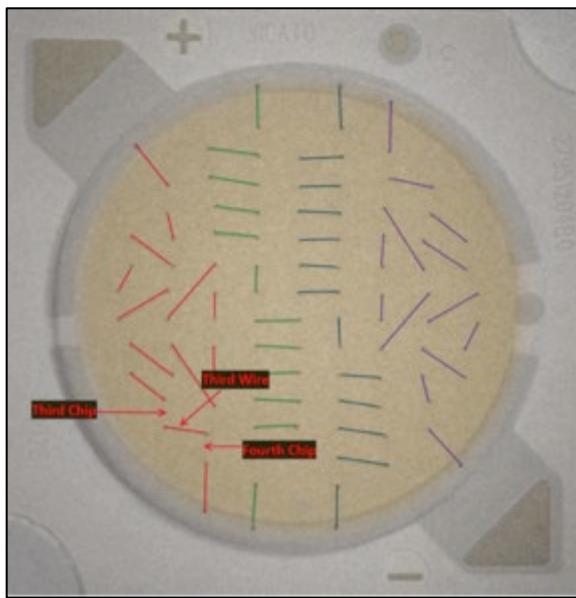
(h) The Xicato XOB09952715X3621 comprises a first wire which connects from the anode pattern to the first chip.



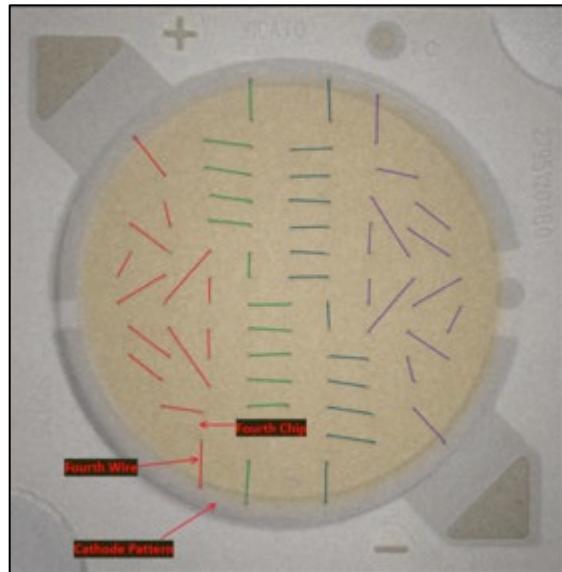
(i) The Xicato XOB09952715X3621 comprises a second wire which connects the first chip to the second.



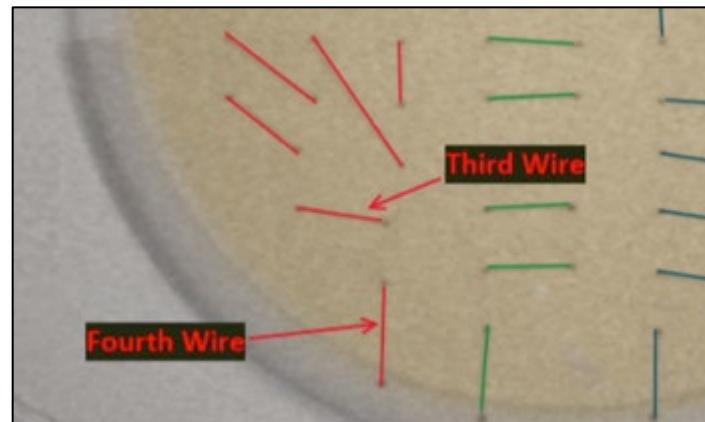
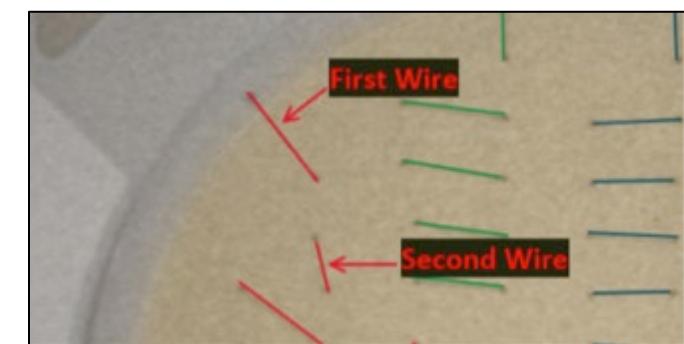
(j) The Xicato XOB09952715X3621 comprises a third wire which connects the third chip to the fourth.



(k) The Xicato XOB09952715X3621 comprises a fourth wire which connects the fourth chip to the cathode pattern.



(l) The Xicato XOB09952715X3621 comprises a first wire which is longer than the second, and a fourth wire which is longer than the third.



146. The foregoing structure, function, and operation of the exemplary Accused Instrumentality meets all limitations of at least exemplary claim 1 of the '942 Patent.

147. Defendants' acts of making, using, selling, offering for sale and/or importing the Accused Instrumentalities are without Plaintiff's license or authorization.

148. Defendants' unauthorized actions therefore constitute direct infringement of Plaintiff's exclusive rights pursuant to 35 U.S.C. § 271(a), either literally or under the doctrine of equivalents, and Plaintiff is entitled to recover from Defendants the damages sustained as a result of Defendants' infringement of the '942 Patent in an amount to be determined at trial, which amount shall be no less than a reasonable royalty, together with interest and costs as fixed by this Court pursuant to 35 U.S.C. § 284.

149. Defendants' infringement of the '942 Patent has injured Plaintiff and Plaintiff is entitled to recover damages from Defendants.

Willful Infringement

150. Defendants have had actual knowledge of the '942 Patent at least as of service of this Complaint.

151. Notwithstanding this knowledge, Defendants have knowingly or with reckless disregard willfully infringed the '942 Patent. Defendants have thus had actual notice of infringement of the '942 Patent and acted despite an objectively high likelihood that its actions constituted infringement of Plaintiff's valid patent rights, either literally or equivalently.

152. This objective risk was either known or so obvious that it should have been known to Defendants. Accordingly, Plaintiff seeks enhanced damages pursuant to 35 U.S.C. §§ 284 and 285.

Indirect Infringement

153. At least as early as the service of this Complaint, Defendants indirectly infringe the '942 Patent within the United States by inducement under 35 U.S.C. §271(b). By failing to cease making, using, selling, importing, or offering for sale the Accused Instrumentalities at least as of the service of this Complaint, Defendants have knowingly and intentionally induced users of the Accused Instrumentalities to directly infringe one or more claims of the '942 Patent, including, by: (1) providing instructions or information, for example on publicly accessible websites, to explain how to use the Accused Instrumentalities, including the use of the Accused Instrumentalities in manners described above, which are expressly incorporated herein; and (2) touting these uses of the Accused Instrumentalities in advertisements, including but not limited to, those on websites. Use of the Accused Instrumentalities in the manner intended and/or instructed by Defendants necessarily infringes the '942 Patent.

154. At least as of the service of this Complaint, Defendants also indirectly infringe the '942 Patent within the United States by contributory infringement under 35 U.S.C. §271(c). Defendants are aware, at least as of the service of this Complaint, that components of the Accused Instrumentalities are a material and substantial part of the inventions claimed by the '942 Patent, and are designed for a use that is both patented and infringing, and have no substantial non-infringing uses. By failing to cease making, using, selling, importing, or offering for sale the Accused Instrumentalities (and components thereof) at least as of the service of this Complaint, Defendants have knowingly and intentionally contributed to direct infringement by their customers of one or more claims of the '942 Patent, including, by: (1) providing instructions or information, for example on publicly accessible websites, to explain how to use the Accused Instrumentalities,

including the use of the Accused Instrumentalities in manners described above, which are expressly incorporated herein; and (2) touting these uses of the Accused Instrumentalities in advertisements, including but not limited to, those on websites. Use of the Accused Instrumentalities in the manner intended by Defendants necessarily infringes the '942 Patent.

155. As a result of Defendants' infringement, Plaintiff has suffered monetary damages, and is entitled to an award of damages adequate to compensate it for such infringement which, by law, can be no less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

COUNT VII – INFRINGEMENT OF THE '133 PATENT

156. Plaintiff incorporates by reference the allegations in all preceding paragraphs as if fully set forth herein.

157. U.S. Patent No. 9,735,133 ("the '133 Patent") is entitled "LIGHT-EMITTING DEVICE AND LIGHTING DEVICE PROVIDED WITH THE SAME" and was issued on Aug. 15, 2017. A true and correct copy of the '133 Patent is attached as **Exhibit G**.

158. The '133 Patent was filed on Oct. 11, 2016 as U.S. Patent Application No. 15/290,232.

159. Plaintiff is the owner of all rights, title, and interest in and to the '133 Patent, with the full and exclusive right to bring suit to enforce the '133 Patent, including the right to recover for past infringement.

160. The '133 Patent is valid and enforceable under United States Patent Laws.

Technical Description

161. The '133 Patent is a continuation of application No. 14/882,574, filed on Oct. 14, 2015, now Pat. No. 9,490,236, which is a continuation of application No. 14/521,105, filed on Oct. 22, 2014, now Pat. No. 9,188,321, which is a division of application No. 13/242,329, filed on Sep. 23, 2011, now Pat. No. 9,018,832, and relates to the same area of technology.

162. The technology of the '133 Patent relates to a light emitting device ("LED") "capable of ensuring an electric connection between a light-emitting element and an electrode without generating any problem in practical use, by both connecting methods with a solder and a connector, and a lighting device provided with the light-emitting device are provided. The light-emitting device according to the present invention has a plurality of LED chips, and a soldering electrode land and a connector connecting electrode land electrically connected to the chips, on a ceramic substrate. The soldering electrode land is formed of a first conductive material having a function to prevent diffusion to a solder, and the connector connecting electrode land is formed of a second conductive material having a function to prevent oxidation." **Exhibit G** at abstract.

163. The '133 Patent identifies problems in the prior art, including that "in a case where the conductor pattern to be externally connected is formed of gold (Au film) on the substrate 103, and a solder is used to externally connect the conductor pattern, the gold contained in the conductor pattern is diffused in the solder and an intermetallic compound is formed in some cases. Thus, when this phenomenon is repeatedly generated, the Au film, the Cu film, and the Ni film disappear, and an electrode land and the solder are not connected, which is inconvenient in practical use." *Id.* at 1:45-54. "In addition, a user who wants to make an external connection with a connector other than the solder cannot use the light-emitting device disclosed in the patent document 1.

Meanwhile, a user who wants to make the external connection with the solder suffers from the above problem.” *Id.* at 1:55-59.

164. The ’133 Patent teaches a technical solution to the prior art problem, and provides “a light-emitting device capable of ensuring an electric connection between a light-emitting element and an electrode by both connecting methods with a solder and a connector without generating any problem in practical use, and a lighting device provided with the light-emitting device.” *Id.* at 1:59-64.

165. The ’133 Patent further provides “a light-emitting device capable of densely and compactly mounting LED chips.” *Id.* at 2:5-6. “According to the light-emitting device of the present invention, since the soldering electrode land and the connector connecting electrode land are both previously provided on the substrate, either one of the connection with the solder and the connector can be employed according to a usage way of the user when the user tries to ensure the external electric connection. Thus, a versatile light-emitting device can be provided.” *Id.* at 3:23-30. “In addition, in the case of the external connection with the solder, the present invention solves the problem that Au is diffused in the solder and the intermetallic compound is formed, so that electric connection cannot be ensured like the conventional case because the soldering electrode land is formed of the first conductive material having the function to prevent diffusion to the solder.” *Id.* at 3:32-37.

166. The novel technical solutions taught by the ’133 Patent were not well-understood, routine, or conventional at the time of the inventions of the ’133 Patent.

Direct Infringement

167. On information and belief, Defendants, without authorization or license from Plaintiff, have been and are presently directly infringing the '133 Patent, either literally or equivalently, as infringement is defined by 35 U.S.C. § 271(a), including through making, using, (including for testing purposes), selling and offering for sale methods and systems infringing one or more claims of the '133 Patent. Defendants are thus liable for direct infringement pursuant to 35 U.S.C. § 271(a). Exemplary infringing instrumentalities include the Xicato XOB09952715X3621, Xicato XOB09954015X3621, Xicato XOB14904050X3621, and all other substantially similar products.

168. Claim 1 of the '133 Patent recites:

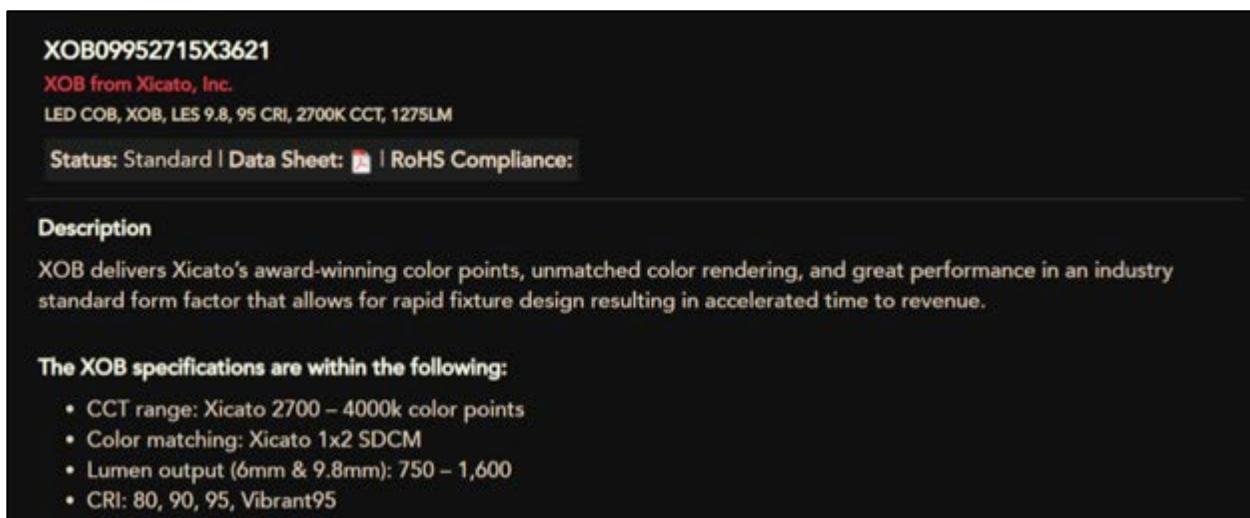
1. A light emitting device comprising:
 - (a) a substrate;
 - (b) a light-emitting part formed on the substrate;
 - (c) a sealing body to cover the light-emitting part;
 - (d) a first wiring pattern formed on the substrate, the first wiring pattern being used for an anode-side connection; and
 - (e) a second wiring pattern formed on the substrate, the second wiring pattern being used for a cathode-side connection, wherein
 - (f) the light-emitting part includes a plurality of LED chips arranged in at least two LED rows including a first row and a second row, the number of the LED chips in the first row being smaller than that in the second row,
 - (g) a plurality of series circuits, each of which is composed of the same number of the LED chips connected in series as the others, are formed, each of the series

circuits having one end connected to the first wiring pattern and the other end connected to the second wiring pattern, and

(h) at least one of the series circuits has a portion where an electric connection is made between one of the LED chips in the first row and one of the LED chips in a row adjacent to the first row.

169. Defendants infringe exemplary claim 1, as a non-limiting example only, by the Xicato XOB09952715X3621:

1. The Xicato XOB09952715X3621 is a light emitting device.



XOB09952715X3621
XOB from Xicato, Inc.
LED COB, XOB, LES 9.8, 95 CRI, 2700K CCT, 1275LM
Status: Standard | Data Sheet: [link] | RoHS Compliance: [link]

Description
XOB delivers Xicato's award-winning color points, unmatched color rendering, and great performance in an industry standard form factor that allows for rapid fixture design resulting in accelerated time to revenue.

The XOB specifications are within the following:

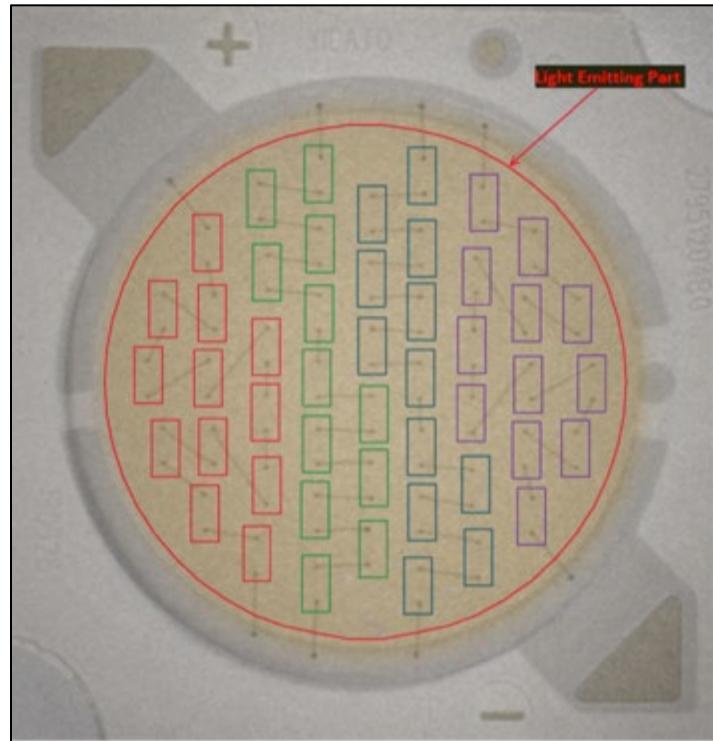
- CCT range: Xicato 2700 – 4000k color points
- Color matching: Xicato 1x2 SDCM
- Lumen output (6mm & 9.8mm): 750 – 1,600
- CRI: 80, 90, 95, Vibrant95

(<https://store.xicato.com/products/detail/xob09952715x3621-xicato-inc/646887/>).

(a) The Xicato XOB09952715X3621 comprises a substrate.



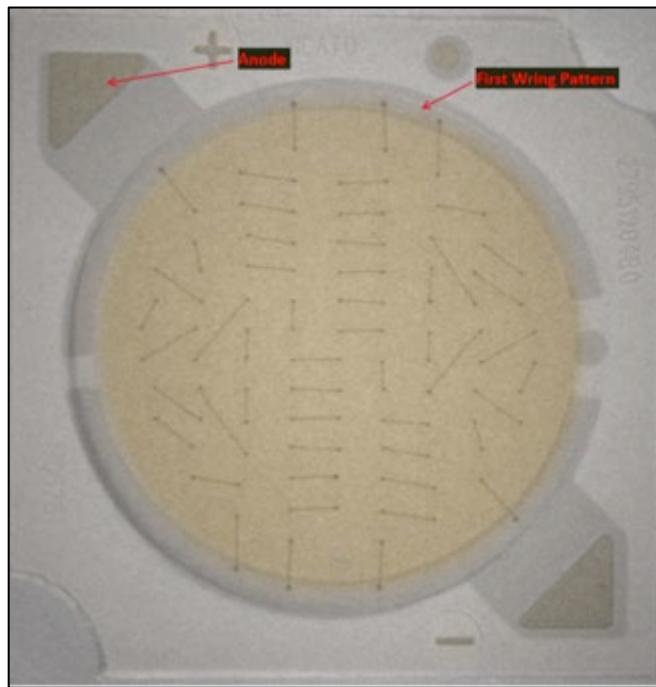
(b) The Xicato XOB09952715X3621 comprises a light emitting part formed on the substrate.



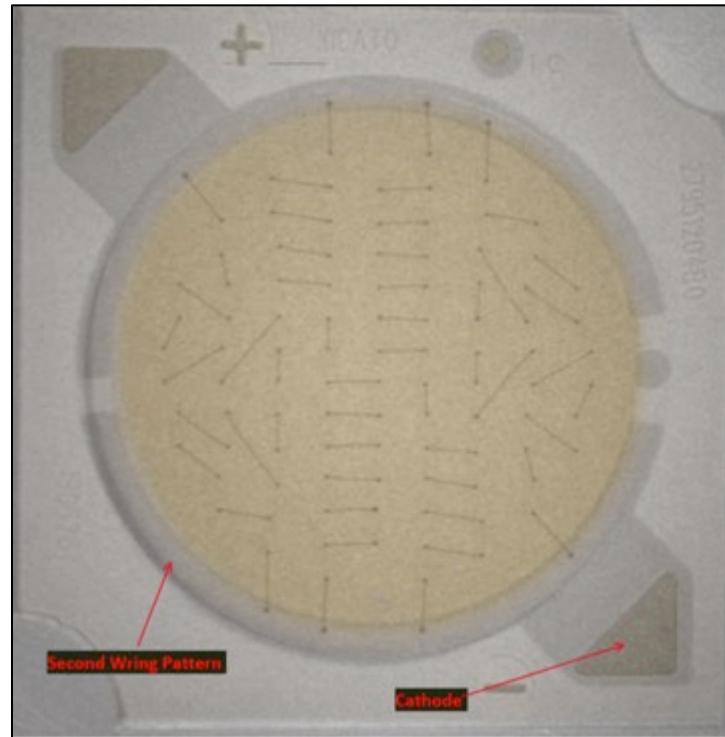
(c) The Xicato XOB09952715X3621 comprises a sealing body to cover the light emitting part.



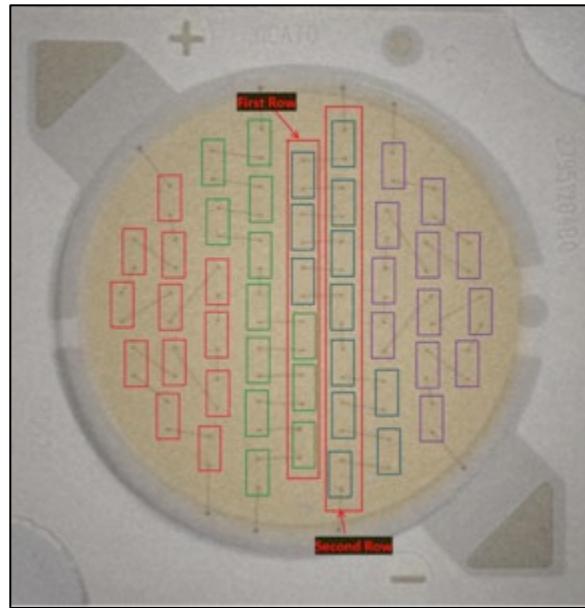
(d) The Xicato XOB09952715X3621 comprises a first wiring pattern formed on the substrate. The first wiring pattern is an anode side connection.



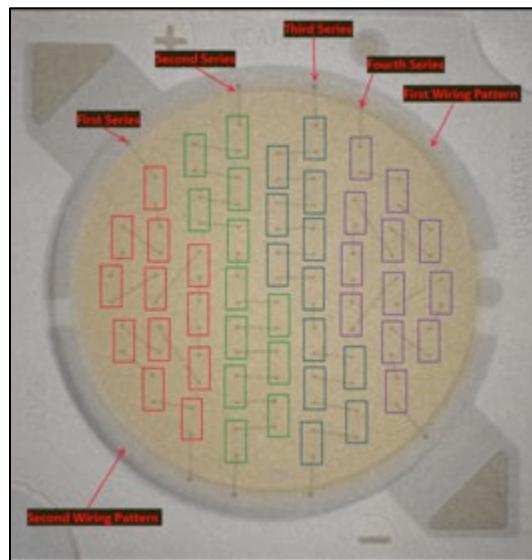
(e) The Xicato XOB09952715X3621 comprises a second wiring pattern formed on the substrate. The second wiring pattern is a cathode side connection.



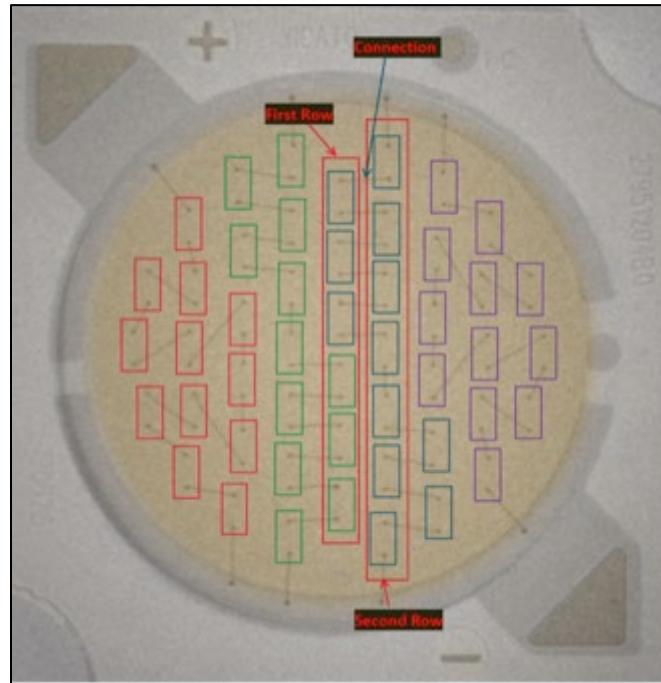
(f) The Xicato XOB09952715X3621 comprises a light emitting part which includes a plurality of LED chips arranged in at least two rows. The number of LED chips in the first row is smaller than the number in the second row (e.g. 6 and 7 LED chips respectively).



(g) The Xicato XOB09952715X3621 comprises a plurality of series circuits each composed of the same number of LED chips (e.g. 10 LED chips) connected in series. Each of the series includes one end connected to the first wiring pattern and the other end connected to the second wiring pattern.



(h) The Xicato XOB09952715X3621 comprises a portion wherein an electric connection is made between one of the LED chips in the first row and one of the LED chips in a row adjacent to the first row.



170. The foregoing structure, function, and operation of the exemplary Accused Instrumentality meets all limitations of at least exemplary claim 1 of the '133 Patent.

171. Defendants' acts of making, using, selling, offering for sale and/or importing the Accused Instrumentalities are without Plaintiff's license or authorization.

172. Defendants' unauthorized actions therefore constitute direct infringement of Plaintiff's exclusive rights pursuant to 35 U.S.C. § 271(a), either literally or under the doctrine of equivalents, and Plaintiff is entitled to recover from Defendants the damages sustained as a result of Defendants' infringement of the '133 Patent in an amount to be determined at trial, which

amount shall be no less than a reasonable royalty, together with interest and costs as fixed by this Court pursuant to 35 U.S.C. § 284.

173. Defendants' infringement of the '133 Patent has injured Plaintiff and Plaintiff is entitled to recover damages from Defendants.

Willful Infringement

174. Defendants have had actual knowledge of the '133 Patent at least as of service of this Complaint.

175. Notwithstanding this knowledge, Defendants have knowingly or with reckless disregard willfully infringed the '133 Patent. Defendants have thus had actual notice of infringement of the '133 Patent and acted despite an objectively high likelihood that its actions constituted infringement of Plaintiff's valid patent rights, either literally or equivalently.

176. This objective risk was either known or so obvious that it should have been known to Defendants. Accordingly, Plaintiff seeks enhanced damages pursuant to 35 U.S.C. §§ 284 and 285.

Indirect Infringement

177. At least as early as the service of this Complaint, Defendants indirectly infringe the '133 Patent within the United States by inducement under 35 U.S.C. §271(b). By failing to cease making, using, selling, importing, or offering for sale the Accused Instrumentalities at least as of the service of this Complaint, Defendants have knowingly and intentionally induced users of the Accused Instrumentalities to directly infringe one or more claims of the '133 Patent, including, by: (1) providing instructions or information, for example on publicly accessible websites, to explain how to use the Accused Instrumentalities, including the use of the Accused

Instrumentalities in manners described above, which are expressly incorporated herein; and (2) touting these uses of the Accused Instrumentalities in advertisements, including but not limited to, those on websites. Use of the Accused Instrumentalities in the manner intended and/or instructed by Defendants necessarily infringes the '133 Patent.

178. At least as of the service of this Complaint, Defendants also indirectly infringe the '133 Patent within the United States by contributory infringement under 35 U.S.C. §271(c). Defendants are aware, at least as of the service of this Complaint, that components of the Accused Instrumentalities are a material and substantial part of the inventions claimed by the '133 Patent, and are designed for a use that is both patented and infringing, and have no substantial non-infringing uses. By failing to cease making, using, selling, importing, or offering for sale the Accused Instrumentalities (and components thereof) at least as of the service of this Complaint, Defendants have knowingly and intentionally contributed to direct infringement by their customers of one or more claims of the '133 Patent, including, by: (1) providing instructions or information, for example on publicly accessible websites, to explain how to use the Accused Instrumentalities, including the use of the Accused Instrumentalities in manners described above, which are expressly incorporated herein; and (2) touting these uses of the Accused Instrumentalities in advertisements, including but not limited to, those on websites. Use of the Accused Instrumentalities in the manner intended by Defendants necessarily infringes the '133 Patent.

179. As a result of Defendants' infringement, Plaintiff has suffered monetary damages, and is entitled to an award of damages adequate to compensate it for such infringement which, by law, can be no less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

COUNT VIII – INFRINGEMENT OF THE '367 PATENT

180. Plaintiff incorporates by reference the allegations in all preceding paragraphs as if fully set forth herein.

181. U.S. Patent No. 9,966,367 (“the '367 Patent”) is entitled “LIGHT EMITTING DEVICE” and was issued on May 8, 2018. A true and correct copy of the '367 Patent is attached as **Exhibit H**.

182. The '367 Patent was filed on May 5, 2017 as U.S. Patent Application No. 15/587,759.

183. Plaintiff is the owner of all rights, title, and interest in and to the '367 Patent, with the full and exclusive right to bring suit to enforce the '367 Patent, including the right to recover for past infringement.

184. The '367 Patent is valid and enforceable under United States Patent Laws.

Technical Description

185. The '367 Patent is a division of application No. 15/187,945, filed on Jun. 21, 2016, now Pat. No. 9,679,942, which is a division of application No. 14/674,624, filed on Mar. 31, 2015, now Pat. No. 9,425,236, which is a division of application No. 14/217,701, filed on Mar. 18, 2014, now Pat. No. 9,093,357, which is a division of application No. 13/799,373, filed on Mar. 13, 2013, now Pat. No. 8,723,195, which is a continuation of application No. 13/011,124, filed on Jan. 21, 2011, now Pat. No. 8,421,094, and relates to the same area of technology.

186. The technology of the '367 Patent relates to a light emitting device (“LED”) including “a ceramic substrate; a plurality of LED chips; a printed resistor(s) connected in parallel with the plurality of LED chips; a dam resin made of a resin having a low optical transmittance; a

fluorescent-material-containing resin layer; and an anode-side electrode and a cathode-side electrode, (a) which are provided on a primary surface of the ceramic substrate so as to face each other along a first direction on the primary surface and (b) which are disposed below at least one of the dam resin and the fluorescent-material-containing resin layer. With the configuration in which a plurality of LEDs, which are connected in a series-parallel connection, are provided on a substrate, it is possible to provide a light emitting device which can achieve restraining of luminance unevenness and an improvement in luminous efficiency.” **Exhibit H** at abstract.

187. The '367 Patent describes the technical problems facing the prior art in detail. *Id.* at 2:36-3:34 (incorporated here by reference). The prior art problems include “that luminance becomes uneven and that luminous efficiency is decreased due to absorption of light by the electrode wiring patterns.” *Id.* at 2:52-55. Other problems include large package size, complicated manufacturing process, decreased luminance due to light absorption, difficulty to provide LEDs in the package center. *Id.* at 2:36-3:34.

188. The '367 Patent teaches a technical solution for the prior art problems in detail. *Id.* at 3:38-4:37 (incorporated here by reference).

189. The '367 Patent further details the advantages of its invention. *Id.* at 4:41-5:40 (incorporated here by reference). The configuration taught by the '367 Patent “reduces distances between the light emitting elements, thereby increasing a packaging density of the light emitting elements. Consequently, it is advantageously possible to restrain that light emitted from the light emitting elements appears bright dots and to restrain in-plane luminance unevenness of the light emitting device. Furthermore, it is also advantageously possible to downsize the light emitting device.” *Id.* at 5:19-26. Undesired light absorption is reduced. *Id.* at 4:24-28.

190. The novel technical solutions taught by the '367 Patent were not well-understood, routine, or conventional at the time of the inventions of the '367 Patent.

Direct Infringement

191. On information and belief, Defendants, without authorization or license from Plaintiff, have been and are presently directly infringing the '367 Patent, either literally or equivalently, as infringement is defined by 35 U.S.C. § 271(a), including through making, using, (including for testing purposes), selling and offering for sale methods and systems infringing one or more claims of the '367 Patent. Defendants are thus liable for direct infringement pursuant to 35 U.S.C. § 271(a). Exemplary infringing instrumentalities include the Xicato XOB09952715X3621, Xicato XOB09954015X3621, Xicato XOB14904050X3621, and all other substantially similar products.

192. Claim 1 of the '367 Patent recites:

1. A light emitting device comprising:
 - (a) a substrate;
 - (b) a plurality of LED chips positioned around a center of a primary surface of the substrate;
 - (c) a resin frame made of resin that has light reflectivity, formed on the primary surface of said substrate and provided annularly so as to surround a mounting area in which said plurality of LED chips are provided;
 - (d) an anode-side electrode land and a cathode-side electrode land which are electrodes to be connected to an external voltage supply of said light emitting

device, the anode-side electrode land and the cathode-side electrode land being provided outside said resin frame;

- (e) an electrode wiring pattern formed on the primary surface of said substrate including (i) an anode pattern extending from said anode-side electrode land to a portion under said resin frame and
- (f) (ii) a cathode pattern extending from said cathode-side electrode land to another portion under said resin frame, so as to electrically connect the plurality of LED chips to the anode-side electrode land and the cathode-side electrode land; and
- (g) a protection film provided on the anode pattern and the cathode pattern.

193. Defendants infringe exemplary claim 1, as a non-limiting example only, by the Xicato XOB09952715X3621:

1. The Xicato XOB09952715X3621 is a light emitting device.

XOB09952715X3621
XOB from Xicato, Inc.
LED COB, XOB, LES 9.8, 95 CRI, 2700K CCT, 1275LM
Status: Standard | **Data Sheet:**  | **RoHS Compliance:**

Description

XOB delivers Xicato's award-winning color points, unmatched color rendering, and great performance in an industry standard form factor that allows for rapid fixture design resulting in accelerated time to revenue.

The XOB specifications are within the following:

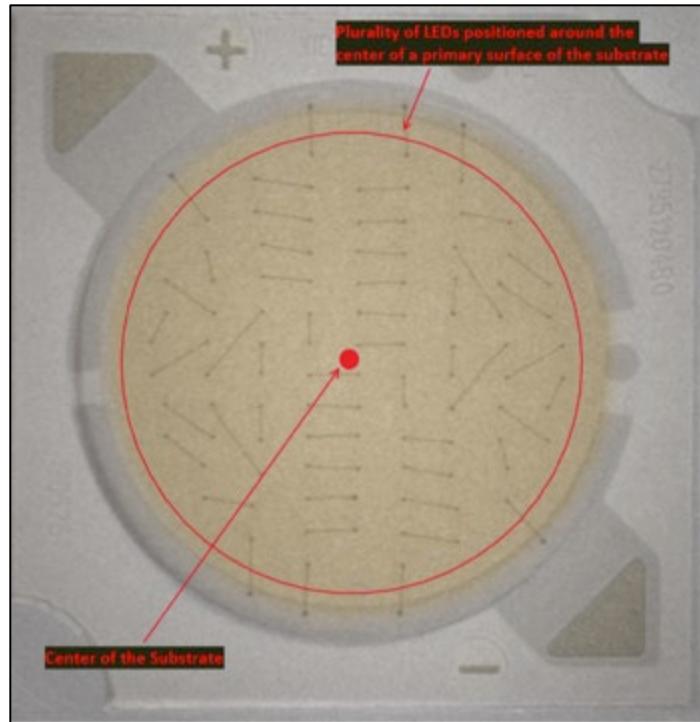
- CCT range: Xicato 2700 – 4000k color points
- Color matching: Xicato 1x2 SDCM
- Lumen output (6mm & 9.8mm): 750 – 1,600
- CRI: 80, 90, 95, Vibrant95

(<https://store.xicato.com/products/detail/xob09952715x3621-xicato-inc/646887/>)

- (a) The Xicato XOB09952715X3621 comprises a substrate.

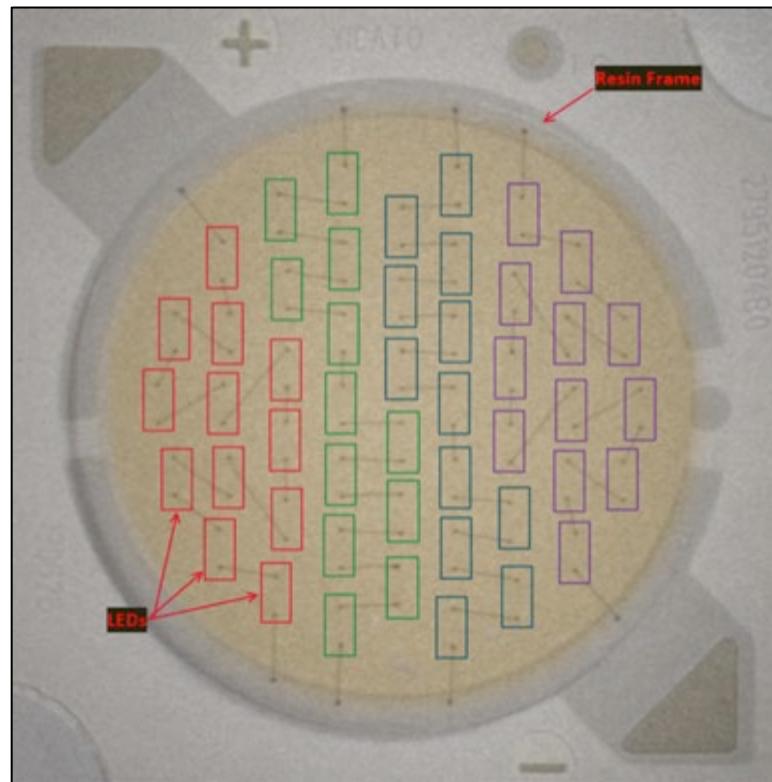


(b) The Xicato XOB09952715X3621 comprises a plurality of LED chips positioned around a center of a primary surface of the substrate.



(c) The Xicato XOB09952715X3621 comprises a resin frame made of resin that has high light reflectivity (e.g. white and opaque) which is formed on the

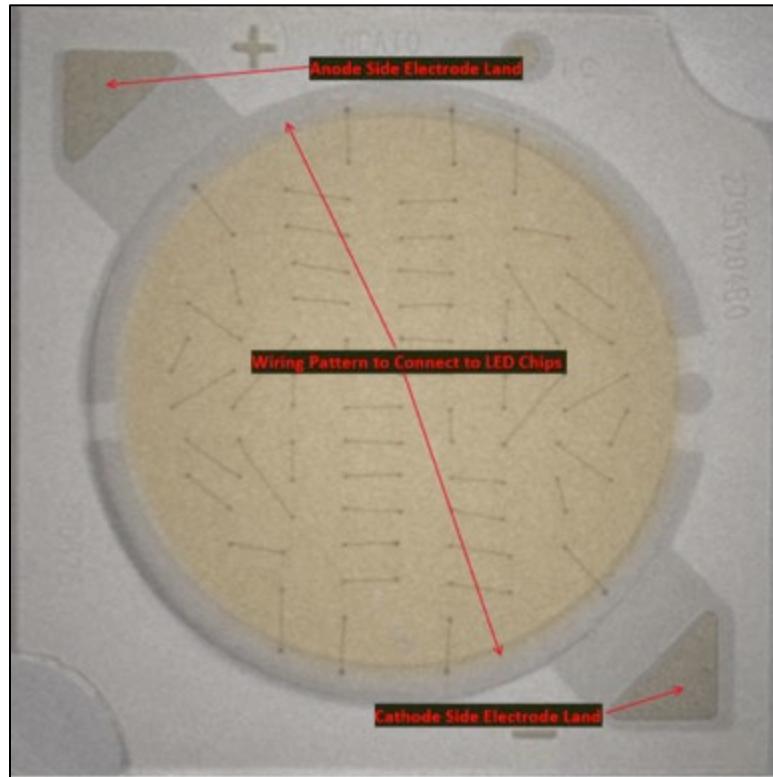
primary surface of the substrate and provided annularly so as to surround a mounting area in which the plurality of LED chips are provided.



(d) The Xicato XOB09952715X3621 comprises anode and cathode side electrode lands which are to be connected to an external voltage supply and which are provided outside of the resin frame.

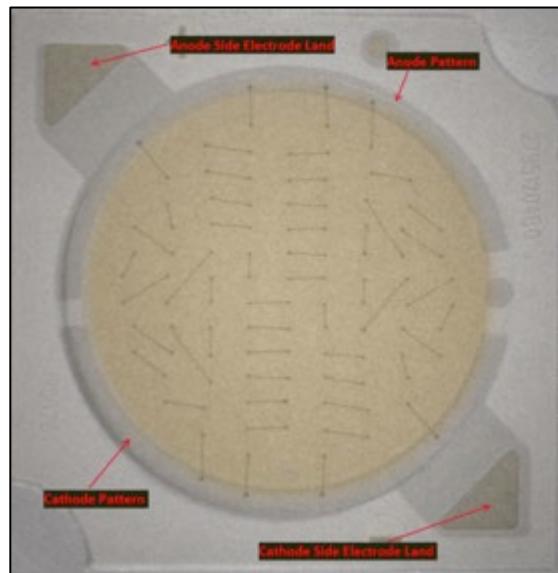


(e) The Xicato XOB09952715X3621 comprises an electrode wiring pattern on the primary surface of the substrate which includes an anode pattern extending from the anode side electrode land to a portion under the resin frame.



(f) The Xicato XOB09952715X3621 comprises an electrode wiring pattern on the primary surface of the substrate which includes a cathode pattern extending from the cathode side electrode land to another portion under the resin frame.

The LED chips are connected by the anode and cathode side wiring patterns to the anode and cathode side electrode lands.



(g) The Xicato XOB09952715X3621 comprises a protection film provided on the anode pattern and the cathode pattern.



194. The foregoing structure, function, and operation of the exemplary Accused Instrumentality meets all limitations of at least exemplary claim 1 of the '367 Patent.

195. Defendants' acts of making, using, selling, offering for sale and/or importing the Accused Instrumentalities are without Plaintiff's license or authorization.

196. Defendants' unauthorized actions therefore constitute direct infringement of Plaintiff's exclusive rights pursuant to 35 U.S.C. § 271(a), either literally or under the doctrine of equivalents, and Plaintiff is entitled to recover from Defendants the damages sustained as a result of Defendants' infringement of the '367 Patent in an amount to be determined at trial, which amount shall be no less than a reasonable royalty, together with interest and costs as fixed by this Court pursuant to 35 U.S.C. § 284.

197. Defendants' infringement of the '367 Patent has injured Plaintiff and Plaintiff is entitled to recover damages from Defendants.

Willful Infringement

198. Defendants have had actual knowledge of the '367 Patent at least as of service of this Complaint.

199. Notwithstanding this knowledge, Defendants have knowingly or with reckless disregard willfully infringed the '367 Patent. Defendants have thus had actual notice of infringement of the '367 Patent and acted despite an objectively high likelihood that its actions constituted infringement of Plaintiff's valid patent rights, either literally or equivalently.

200. This objective risk was either known or so obvious that it should have been known to Defendants. Accordingly, Plaintiff seeks enhanced damages pursuant to 35 U.S.C. §§ 284 and 285.

Indirect Infringement

201. At least as early as the service of this Complaint, Defendants indirectly infringe the '367 Patent within the United States by inducement under 35 U.S.C. §271(b). By failing to cease making, using, selling, importing, or offering for sale the Accused Instrumentalities at least as of the service of this Complaint, Defendants have knowingly and intentionally induced users of the Accused Instrumentalities to directly infringe one or more claims of the '367 Patent, including, by: (1) providing instructions or information, for example on publicly accessible websites, to explain how to use the Accused Instrumentalities, including the use of the Accused Instrumentalities in manners described above, which are expressly incorporated herein; and (2) touting these uses of the Accused Instrumentalities in advertisements, including but not limited to, those on websites. Use of the Accused Instrumentalities in the manner intended and/or instructed by Defendants necessarily infringes the '367 Patent.

202. At least as of the service of this Complaint, Defendants also indirectly infringe the '367 Patent within the United States by contributory infringement under 35 U.S.C. §271(c). Defendants are aware, at least as of the service of this Complaint, that components of the Accused Instrumentalities are a material and substantial part of the inventions claimed by the '367 Patent, and are designed for a use that is both patented and infringing, and have no substantial non-infringing uses. By failing to cease making, using, selling, importing, or offering for sale the Accused Instrumentalities (and components thereof) at least as of the service of this Complaint, Defendants have knowingly and intentionally contributed to direct infringement by their customers of one or more claims of the '367 Patent, including, by: (1) providing instructions or information, for example on publicly accessible websites, to explain how to use the Accused Instrumentalities,

including the use of the Accused Instrumentalities in manners described above, which are expressly incorporated herein; and (2) touting these uses of the Accused Instrumentalities in advertisements, including but not limited to, those on websites. Use of the Accused Instrumentalities in the manner intended by Defendants necessarily infringes the '367 Patent.

203. As a result of Defendants' infringement, Plaintiff has suffered monetary damages, and is entitled to an award of damages adequate to compensate it for such infringement which, by law, can be no less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

JURY DEMAND

Plaintiff hereby demands a trial by jury on all issues so triable.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff requests that this Court enter judgment against Defendants and any other entity by and through which Defendants make, sell, use, offer for sale or import, or have made, sold, used, offered for sale or imported infringing Accused Instrumentalities as follows:

- A. Adjudicating, declaring, and entering judgment that Defendants have directly infringed the Asserted Patents either literally or under the doctrine of equivalents;
- B. Adjudicating, declaring, and entering judgment that Defendants have induced infringement and continue to induce infringement of one or more claims of the Asserted Patents;
- C. Adjudicating, declaring, and entering judgment that Defendants have contributed to and continue to contribute to infringement of one or more claims of the Asserted Patents;

- D. Awarding damages to be paid by Defendants, jointly and severally, that are adequate to compensate Plaintiff for Defendants' past infringement of the Asserted Patents and any continuing or future infringement through the date such judgment is entered, including interest, costs, expenses and an accounting of all infringing acts including, but not limited to, those acts not presented at trial;
- E. Awarding Plaintiff pre-judgment and post-judgment interest; and
- F. Awarding Plaintiff such other and further relief at law or in equity as this Court deems just and proper.

Respectfully submitted,

Date: December 3, 2021

/s/ Cecil E. Key

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